DOCUMENT RESUME

ED 041 855 24 SP 004 121

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TITLE	Field Testing and Evaluation of a Research and Instructional Unit for Increasing the Utilization of Research and Development Information and Techniques in a Secondary School System. Final Report.
INSTITUTION	Tamalpais Union High School District, Larkspur, Calif.
SPONS AGENCY	Office of Education (DHEW), Washington, D.C. Bureau of Research.
BUREAU NO	BR 8-I-156
PUB DATE	Jul 69
GRANT	OEG-9-9-140156-0013(057)
NOTE	93p.
EDRS PRICE	EDRS Price MF-$0.50 HC-$4.75
DESCRIPTORS	*Action Research, Cost Effectiveness, Curriculum Development, *Curriculum Research, Evaluation, Inservice Teacher Education, *Organizational Climate, Released Time, *Research and Instruction Units, Research Skills, *Research Utilization, Secondary School Teachers, Social Studies

ABSTRACT

In order to determine the effectiveness of a Research and Instructional Unit (R & I Unit) in promoting increased use of research data and methodology in curricular decisionmaking at the classroom level, the Far West Laboratory for Educational Research and Development, in cooperation with Tamalpais Union High School District, conducted a pilot study with a group of secondary school social studies teachers. The study was conducted in two stages. During the preoperational stage, participants were chosen and given preliminary training through field visits and workshops. During the operational stage, Laboratory consultants assisted R & I Unit members in planning and conducting a needs assessment study, a problem formulation study, and field tests of several instructional innovations, and in drawing up a tentative prospectus for the 1969-1970 academic year. Findings indicate the R & I Unit did offer an organizational climate which facilitated the use of research and development information for instructional improvement. Further testing is required, however, to determine the optimum amount of released time required, the optimum type of research and development training required by an R & I Unit team, and the cost-effectiveness of the R & I Unit structure in comparison with alternative arrangements. (Forty-seven pages of tables and charts are appended.) (RT)

ED041855

FINAL REPORT

Project No. 8-1-156
Grant No. OEG-9-140156-0013 (057)

Field Testing and Evaluation of a Research and Instructional Unit For Increasing the Utilization of Research and Development Information and Techniques in a Secondary School System

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Robert D. Torrey, Superintendent

Tamalpais Union High School District

Larkspur, California 94939

July, 1969

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Office of Education
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SP004121

PREFACE

The Project Director gratefully acknowledges the collaboration and cooperation of the Far West Laboratory for Educational Research and Development, which was essential to the implementation of this pilot project. In particular, he wishes to thank Dr. John Hemphill and Dr. Paul Hood for their encouragement and generous allocation of resources; Miss Brenda Whitney for her gracious cooperation with the R & I Unit team; Mrs. Linda York for her invaluable research assistance; and, especially, Dr. David Carlisle, principal consultant, for his continued efforts and intense commitment to the overall management of the project.

While the author acknowledges the major contribution of Dr. Carlisle, Miss Whitney, and Mrs. York in the preparation of this report, he also assumes full responsibility for its contents.

Robert D. Torrey, Superintendent
Tamalpais Union High School District
Larkspur, California

TABLE OF CONTENTS

Page

I. INTRODUCTION 1

Summary 1

Background and Objectives 2

Focus and Organization of the Study 2

II. THE CONTEXT DIMENSION 5

Site Selection Procedures 5

Description of the District Environment 5

Description of the Pilot Study Site: Redwood High School 6

III. THE INPUT DIMENSION 11

Financial Resources 11

Personnel Resources 13

Role Definitions for Participating Personnel 13

Interest, Knowledge and Attitudes of Personnel Toward R & D Activities 14

Training Activities in Knowledge Utilization Skills 17

IV. THE PROCESS DIMENSION 19

Role Definition 19

Goal Redefinition 20

Planning Procedures 20

Time Use 21

Utilization of Resources 22

Teaming Traits 22

V. THE PRODUCT DIMENSION 24

Rating of Hard Products by Panel of Judges 24

Page

Participants' Satisfaction with Operation of R & I Unit 24

Perceived Strengths and Weaknesses of R & I Arrangement 27

Summary of Project Outcomes 29

Evidence of Acquisition of R & D Skills by R & I Unit Teachers 30

Permanent Contextual Changes Derived from Redwood's Involvement in R & I Unit Investigation 32

Increased Understanding of Problems to be Dealt with in Implementing an Organizational Arrangement to Improve Teachers' Decision-Making Skills 32

VI. SUGGESTIONS AND IMPLICATIONS FOR THE FUTURE 34

Implications for Those Interested in Training Teachers in Knowledge Utilization 34

Implications for the District 35

Summary 35

VII. FIGURES AND TABLES 9

Redwood High School Basic Organizational Pattern, Figure 1 9

Flow Chart of the Steps Employed at Tamalpais Union High School District for Changing the Educational Program or Course of Study, Figure 2 10

Cost of Pilot Activities, Table 1 12

Satisfaction with Operation of R & I Unit, Table 2 26

Major Strengths and Weaknesses of R & I Unit, Table 3 28

Comparative Importance of Strengths and Weaknesses, Table 4 29

VIII. BIBLIOGRAPHY 37

Published Documents 37

Reports 38

Unpublished Material 39

Page

IX. APPENDIX MATERIALS 41

Criteria Used as a Guide in Selection for Site of Pilot Activities, Table A 41

Staffing Component for Full-Time Personnel, Tamalpais Union High School District, 1967-68, Table B 42

Number of Certificated Personnel by Years of Experience and Amount of Training, Tamalpais Union High School District, 1967-68, Table C 43

Major Topics of Interest in Educational Innovations in Projects Submitted for Funding Under Special State or Federal Subventions, Table D 44

Ethnic or Racial Distribution of Redwood High School Students and Selected Socio-Economic Characteristics for Families Residing in the Redwood High School Attendance Area, Table E . . 45

Organizational Chart for Administrative Policy Development, Figure 1 46

Number of Certificated Personnel, by Years of Experience and Amount of Training, for the Social Studies Department and R & I Unit Team, Redwood High School, 1967-68, Table F 47

Responsibilities of Personnel Involved in the R & I Unit Activity for Reporting Period Dec. 1967-July 1969, Table G . . . 48

Frequency of Return of the Educational Information Interest Survey, 1968 and 1969, Table H 52

Mean Interest Ratings of R & I Unit, Group A and Group B for 1968 and 1969, Table I 53

Mean Ratings of Innovations as Promising or Open to Question for R & I Unit, Group A and Group B, 1969, Table J 56

Estimates and Ratios of R & D Percentages, Table K 58

XYZ Curriculum Proposal Response Percentages, Table L 59

Mean Ratings of Attractive and Unattractive Aspects of the XYZ Curriculum Proposal, Table M 61

Mean Ratings of Research and Development Practices, Table N . . . 63

Mean Rating of Sources of Educational R & I Information, Table O . . 65

Page

Mean Ranks of Seven Characteristics of an Educational Information Service, Table P. 66

Degree of Knowledge of Twenty-Four Social Studies Projects Presently Under Development, Table Q 67

Survey of Pre-Operational Planning and Training Seminar for R & I Unit Personnel, Table R 68

R & I Unit Ratings of Training Methods Considered Most Effective for Each of Seven Training Areas, Table S 72

R & I Unit Ratings of Training Methods Considered Least Effective for Each of Seven Training Areas, Table T 73

Calendar of Events for February, 1968 - July, 1969, Table U 74

R & I Unit Product Ratings for Each Product Relative to All Comparison Groups Combined, Table V 81

R & I Unit Product Ratings for All Products Combined Relative to Each Comparison Group, Table W 82

Satisfaction with Operation of R & I Unit, Table X 83

Importance of Possible Strengths and Weaknesses of R & I Unit, Table Y . . 85

I. INTRODUCTION

Summary

Project Title: Field Testing and Evaluation of a Research and Instructional Unit For Increasing the Utilization of Research and Development Information and Techniques in a Secondary School System.

Project Objective: To field test a Research and Instructional Unit ("R & I Unit") in a typical suburban high school setting in order to determine its effectiveness in promoting the increased use of research data and methodology in curricular decision-making at the classroom level.

Project Participants: The project was a collaborative effort between the Tamalpais Union High School District, Larkspur, California, and the Far West Laboratory for Educational Research and Development, Berkeley, California. Project Director: Robert D. Torrey, District Superintendent. Principal Consultant, Dr. David Carlisle, Far West Laboratory for Educational Research and Development. R & I Unit members: Raymond F. Kemper, Raymond W. Jacques, Constantino Lavezzo, John M. Thompson, Charles H. Wray, Social Studies instructors at Redwood High School.

Project Activities: Under the guidance of the principal consultant, the R & I Unit began its research and development activities in the summer of 1968. During the 1968-69 school year Unit members were provided one period of released time in common to continue these activities. With the assistance of the principal consultant, as required, the team attempted to use a rational process in making curriculum decisions in the area of American Government. The process included: analysis of student and societal needs, definition of problems, investigation of alternative solutions, development of instructional units, pilot testing of instructional units. The project was monitored continuously by the principal consultant using the C. I. P. P. evaluation model (Context, Input, Process, Product).

Project Results and Conclusions: The findings of this study indicate that the R & I Unit did offer an organizational climate which facilitated the use of research and development information and techniques for instructional improvement.

However, further testing is required to determine: the optimum amount of released time required, the optimum type of R & D training required by a R & I Unit team and the cost-effectiveness of the R & I Unit structure in comparison with alternative arrangements.

Background and Objectives

Developing products and procedures which facilitate the use of research-based information in educational planning and decision-making is a major goal of the Communication Program of the Far West Laboratory for Educational Research and Development. Efforts in this direction are required because most school districts lack pilot lines comparable to those commonly found in industrial firms. Without such organizational structures and procedures it is difficult for school personnel to perform the following important functions in an orderly and continuous manner:

1. Analysis of the on-going instructional program in terms of rationale, goals, performance objectives, content and methods of instruction.
2. Identification and prioritization of unmet instructional needs.
3. Translation of identified needs into problems amenable to solution by application of scientific processes.
4. Formulation of hypotheses as possible solutions to identified problems.
5. Search, retrieval and interpretation of research-based information as possible solutions to identified problems.
6. Demonstration, field test and evaluation of retrieved information on a small-scale basis prior to total district commitment.

Far West Laboratory personnel have hypothesized that if an educational system is to be self-improving, it must perform the functions listed above on a regular basis. Consequently, they have attempted to develop products and techniques which will provide educators with the skills they need to implement constructive changes in their schools. After surveying various methods of training and organizing school personnel to use research information to improve instruction, Laboratory staff decided to pilot test a structure called the "Research and Instructional Unit." The R & I Unit is an invention of the University of Wisconsin Research and Development Center. In design, an R & I Unit is similar to a large team teaching arrangement. Five or six teachers plan and present their courses cooperatively. In addition, the teachers are given released time, reduced teaching loads, and clerical aid to help them conduct joint planning and research activities. Teachers may be organized into R & I Units by grade-level in elementary schools, or by subject-matter departments in secondary schools.

Focus and Organization of the Study

This report is a summary of the activities and outcomes of the R & I Unit pilot study conducted by the Tamalpais Union High School District and the Far West Laboratory. The central question which this study addresses itself to is: Does the R & I

Unit as an organizational arrangement increase the ability of a group of classroom teachers to use research-based information to improve their instructional programs?

The C. I. P. P. model developed by the Center for Evaluation at the Ohio State University provided a framework for the evaluation of the pilot study. For a comprehensive discussion of the C. I. P. P. model, see Stufflebeam, 1968.[1] One exponent of the C. I. P. P. model, Howard Merriman, explained that, "The static elements, context and product evaluation are essentially of a measurement nature, while input and process are the production and monitoring of the potential and real interactions encompassed by the planned change."[2] The four major sections of the report coincide with the four C. I. P. P. dimensions which were used to assess the effectiveness of the R & I Unit: context, input, process, and product. A brief definition of the four evaluative dimensions follows:

Context: A description of the environment where change is to occur, and an identification of problems within the environment.

Input: An assessment of the personnel and economic resources necessary to meet program goals, and an analysis of procedural designs in relation to costs and benefits.

Process: A dynamic dimension which provides periodic feedback to the project consultants so that they can detract defects or problems as they arise. Some process variables are interpersonal relationships, decision-making methods, and the adequacy of physical facilities, time schedule, staff, etc.

Product: A description of the effects of the project in terms of skills acquired and innovations devised by participants. Product evaluation relates context, input, and process variables to the project outcomes.

The design of the R & I Unit pilot study was purposely loose and flexible in keeping with the exploratory nature of the investigation. Laboratory staff members who cooperated in the pilot investigation compared several different methods for training teachers to perform knowledge utilization functions such as (a) identification of instructional problems, (b) formulation of possible solutions, (c) evaluation of innovations, and (d) long-range planning. Some of the training methods evaluated were workshops, consultants, informal lectures, field trips, self-instructional materials, and independent study.

---

[1] Stufflebeam, Daniel L., Evaluation as Enlightenment for Decision-Making, address presented at the Working Conference on Assessment of Educational Outcomes and the Association for Supervision and Curriculum Development. Columbus, Ohio: The Evaluation Center of the Ohio State University, College of Education, January 19, 1968.

[2] Merriman, Howard O., Evaluation of Planned Educational Change at the Educational Agency Level, Occasional Paper 67-106, Evaluation Center, Ohio State University, Columbus, 1967.

The expected outcomes of this study were to obtain information about the processes and financial requirements for adapting and sustaining an R & I Unit within a school system; to begin to develop self-contained instructional packages to assist school personnel in educational planning; to provide a team of classroom teachers with research and planning skills; and to begin constructing a model of how school personnel might use educational research and development findings more effectively.

The study was conducted in two stages. During the preoperational stage (February, 1968 to August, 1968), participants were chosen and given preliminary training through field visits and workshops. During the operational stage (September, 1968 to July, 1969), Laboratory consultants assisted R & I Unit members in planning and conducting a needs assessment study, a problem formulation study, field tests of several instructional innovations, and in drawing up a tentative prospectus for the 1969-1970 academic year. Activities which occurred in the preoperational phase are described in the sections on context and input. The process and product sections discuss the operational phase of the study.

II. THE CONTEXT DIMENSION

Acquiring information to define the environment in which change was to occur required both conceptual and empirical analyses. Collection of baseline data was initiated in conjunction with negotiation and planning activities prior and subsequent to selecting the site for the pilot activities. Techniques such as checklists, demography, interviews, and examination of District documents were used to identify problems within the context. Table A in the Appendix shows the schema employed in context evaluation. The data was used in making planning decisions regarding various aspects of the pilot study.

Site Selection Procedures

During the spring of 1968, Laboratory personnel began negotiations with local districts to select a school to experiment with the R & I Unit arrangement. Deciding on a pilot study site was a three-phase operation. First, a set of guidelines was prepared in an attempt to eliminate debilitating features in the design. Second, the Laboratory reviewed its district contacts to find those that might be willing to cooperate in the pilot study. Third, Redwood High School in the Tamalpais Union High School District was chosen to pilot test the experimental arrangement.

Description of the District Environment

The Tamalpais Union High School District encompasses the populous southern portion of Marin County. Two-thirds of the population of Marin County resides within the District. At present, there are three four-year comprehensive high schools in the District. These high schools serve approximately 7,800 students of which 5,965 (or 76.5%) are in regular day classes. Staffing these schools requires 455 full-time employees. The staffing component for the District as of October 1967 is summarized in Table B in the Appendix.

That the District is committed to maintaining smaller classes and higher salaries can be seen by examining the budget and expenditure statements. A study of per pupil costs in 1966-1967 showed that the District, when compared with 32 other high school districts with 3,000 or more pupils in average daily attendance, ranked second in the per pupil amount of current expenditures. In 1967-1968, the District ranked fourth among 96 high school districts in the average salary paid classroom teachers, and first among districts of equivalent size. Table C in the Appendix shows that nearly three quarters of the certificated staff members hold the equivalent of a Master's degree plus 24 units and have six or more years of experience in public education. It seems evident from the above data that Tamalpais Union High School District should not be considered a typical district. As one of the elite American high school districts, it can provide almost optimal conditions for the development and maintenance of a superior education program. Although the District is not beset with the severe financial maladies or racial conflicts which plague many other districts, it cannot be said that it does not have some problems in these areas. For example, a bond issue to finance a new high school failed to pass and this made it necessary for the District to dip into its reserve funds. This, in turn, influenced the District's decision to terminate the R & I Unit pilot study in July, 1969.

The Tamalpais Union High School District has maintained a research and development program since 1964-1965. The purpose of the program is to use R & D techniques to solve administrative and instructional problems. To accomplish these goals the District has financed, on a continual basis, two major types of activities related to research and development. These are (1) a summer workshop program conducted under the guidance of the Curriculum Council, and (2) staff-initiated, small-scale, R & D grants coordinated and maintained by the Research and Development Council. Grant topics of high interest have included: small and large group instruction; individualized instruction; ungraded program; flexible scheduling; independent study; creativity; use of innovative curriculum materials such as films; curriculum enrichment in Music, Mathematics, Natural Science; instructional aides; instructional materials center; and more recently, pilot activities of the R & I Unit. The District has also participated in a variety of special projects such as ad hoc institutes and projects under grants from E. S. E. A., N. D. E. A., etc. As of February, 1968, of the ten research and development projects of this type which had been completed, five were concerned with the invention and description of innovative instructional materials, three focused on instructional methods, one reported results of a survey of physical facilities for a resource materials center, and one was a literature review of instructional aides. None of the ten projects appeared to stress evaluation. Since February, of the three projects underway, all have stressed formal evaluation as a major part of the investigation. Table D in the Appendix summarizes the topics which the District has studiedwith financial assistance from State or Federal funds. That the R & I Unit was perceived by District staff as an alternate way of organizing and formalizing the District's R & D activities was indicated by the results of an informal Perceptions Q-Sort administered by the principal consultant. The Q-Sort data also revealed that the Special Projects Assistant and the Social Studies Supervisor were interested in comparing summer workshops to the R & I Unit as a means of in-service education.

Description of the Pilot Study Site: Redwood High School

Redwood High School was built in 1957 and is the District's newest high school. As indicated by Table E in the Appendix, most of Redwood's 2,450 students come from white upper-middle and upper class homes. Their parents work primarily in professional, management, and proprietory occupations. Redwood offers a full range of business and vocational courses in addition to its college preparatory program. Approximately 80% of the graduates seek post high school education and many attend the junior college which is within the school's attendance area.

The organizational structure of Redwood High School is more collegial than bureaucratic. Because providing quality instruction is considered the prime task, administrative and pupil personnel services are seen as auxiliary functions. The organization chart in Figure 1 indicates that the major organizational organ is a school-wide committee comprised of curriculum associates, school psychologist, head librarian and counselor. With faculty assistance, this committee supervises curriculum development and evaluation within the various departments. In Redwood's decentralized system, the curriculum associates occupy key roles. The associates have multifarious administrative responsibilities and for this reason they teach four instead of the regular five classes a day. The curriculum associates submitted six recommendations which were instrumental in influencing the administrative staff to restructure organization in 1967-1968. The recommendations infer that Redwood faculty members perceive themselves as professionals who want to maximize their involvement in instructional planning and minimize their participation in routine management functions. More specifically, the curriculum associates felt that an adequate plan should:

1. Emphasize instruction primarily because it is the goal set for the school by the community.
2. Place secondary emphasis on meeting the personal and social needs of students.
3. Provide teachers with maximum autonomy to perform basic professional functions.
4. Exclude the professional staff from the performance of routine operational tasks whenever possible.
5. Capitalize on the collective expertise of the instructional staff by involving them in decision-making.

The directors of the pilot study speculated that opportunities to satisfy the needs of teachers in the five areas described above would increase if teachers were organized into R & I Units within a school system.

Prior to the introduction of the pilot R & I Unit into the school's instructional decision-making structure, suggestions for educational revision usually came from individual teachers, school administrators, summer workshops, or the District Curriculum Council. The R & I Unit made a systematic approach to curriculum change possible, since it enabled teachers to field test instructional innovations prior to their adoption. The normal procedure for initiating curriculum improvement began with the submission of a proposal to the Division of Instruction and continued through the communication network outlined in the flow chart in Figure 2. Several interesting facts can be gleaned from studying this flow chart. First, curriculum proposals seemed to follow a two-phase process:

an informal advisory phase and a development phase. Second, most proposals originated at the classroom level. This modal path is shown by the thick line in the Figure 2 flow chart. Third, all proposals, regardless of their origin, were channeled for review and refinement through a series of district-wide study committees and advisory councils. Final decisions on instructional matters fell mainly within the jurisdiction of the Administrative Council and the Curriculum Council, but could include the other councils shown in Figure 1 in the Appendix.

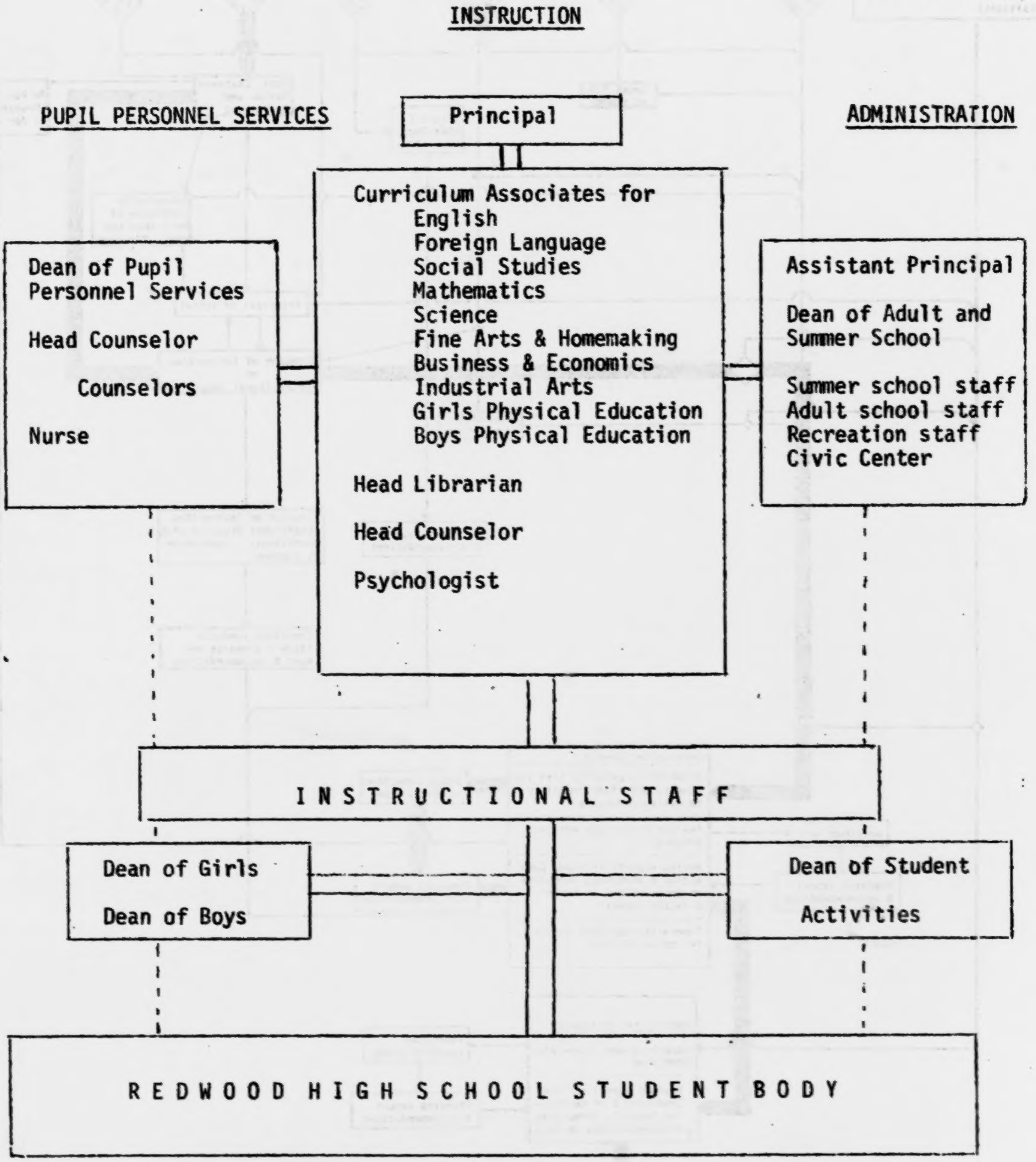
Given the District's high standards, it is not surprising that Redwood's certificated staff members have had extensive educational and professional training. By examining Table F, one can begin to form some concrete impressions of the R & I Unit's organizational environment. The data shows that the majority of Redwood Social Studies teachers have had training which equals or exceeds that required to obtain a Master's degree. R & I Unit members can be distinguished from their department colleagues in at least one way. While R & I Unit members have had comparable academic backgrounds, they have had less classroom experience than the other Social Studies teachers.

Redwood students benefit from the superior training which their teachers have had in numerous ways. The specialized expertise of individual faculty members is reflected by the diversified curriculum. In the Social Studies Department, for example, 16 different courses are offered. Students may select from courses in American government, United States history (7 distinct courses available to accommodate students of differing abilities and interests), world history (2 courses), California history, China and the Far East, Latin American history, Russian history, psychology, and family life education.

In general, then, the high school chosen to participate in the R & I Unit pilot study can be seen as one which (1) serves college-bound upper-middle class students, (2) provides a variety of courses in numerous disciplines, and (3) maintains a well-trained, experienced staff organized to promote instruction as the primary goal of the institution.

FIGURE 1

REDWOOD HIGH SCHOOL
BASIC ORGANIZATIONAL PATTERN[a]


INSTRUCTION
PUPIL PERSONNEL SERVICES
Principal
ADMINISTRATION
Curriculum Associates for
English
Foreign Language
Social Studies
Mathematics
Science
Fine Arts & Homemaking
Business & Economics
Industrial Arts
Girls Physical Education
Boys Physical Education
Head Librarian
Head Counselor
Psychologist
Dean of Pupil Personnel Services
Head Counselor
Counselors
Nurse
Assistant Principal
Dean of Adult and Summer School
Summer school staff
Adult school staff
Recreation staff
Civic Center
INSTRUCTIONAL STAFF
Dean of Girls
Dean of Boys
Dean of Student Activities
REDWOOD HIGH SCHOOL STUDENT BODY

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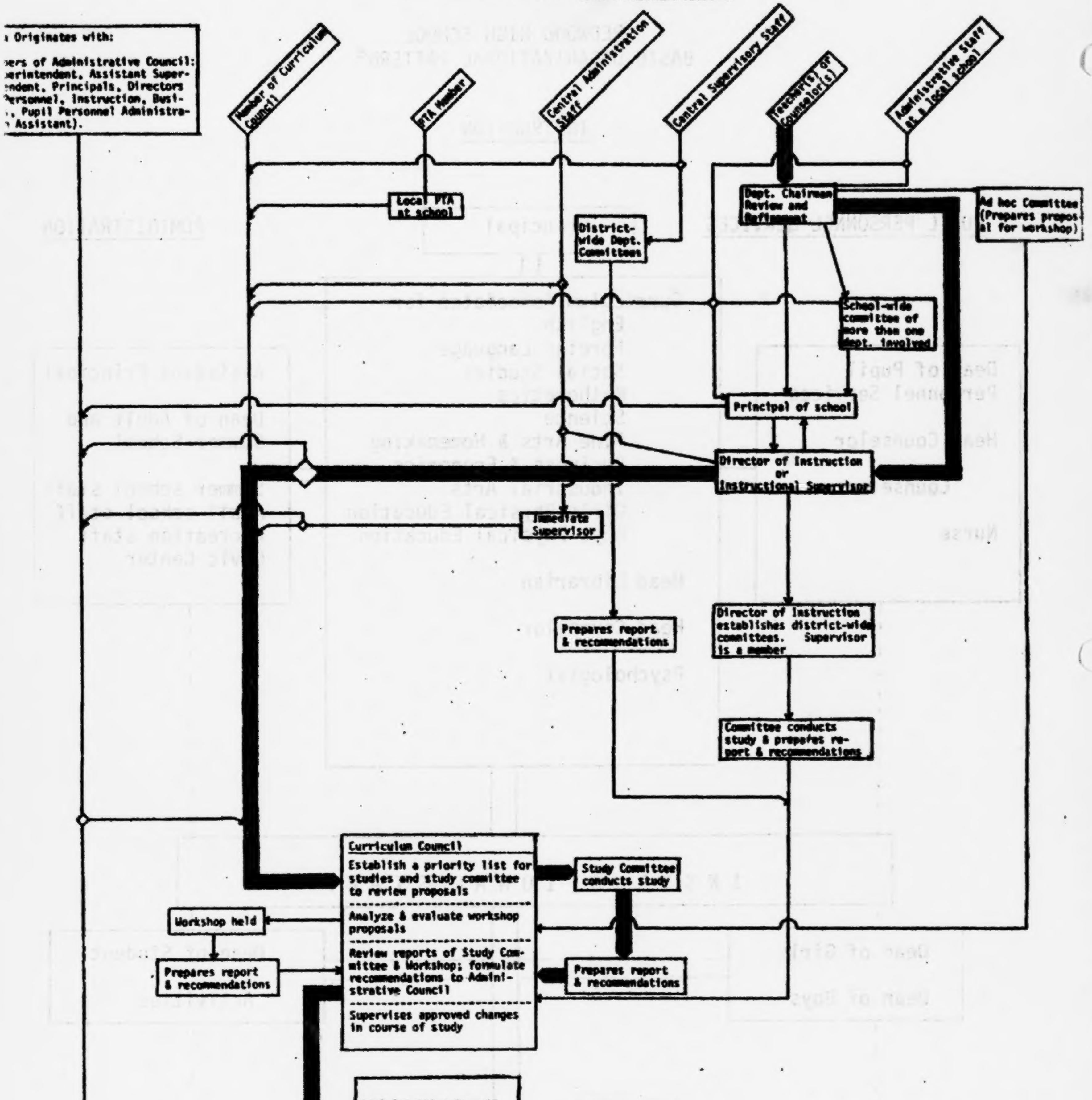
[a] Redwood High School, Report of the Curriculum Associate Workshop, June 19, 1967 - June 30, 1967.

FIGURE 2

FLOW CHART OF THE STEPS EMPLOYED AT
TAMALPAIS UNION HIGH SCHOOL DISTRICT
FOR CHANGING THE EDUCATIONAL PROGRAM OR COURSE OF STUDY[a]


Originates with:
ers of Administrative Council:
erintendent, Assistant Super-
endent, Principals, Directors
Personnel, Instruction, Busi-
, Pupil Personnel Administra-
Assistant).
Member of Curriculum Council
PTA Member
Central Administration Staff
Central Supervisory Staff
Teacher(s) or Counselor(s)
Administrative Staff at a local school
Local PTA at school
District-wide Dept. Committees
Dept. Chairman Review and Refinement
Ad hoc Committee (Prepares proposal for workshop)
School-wide committee of more than one dept. involved
Principal of school
Director of Instruction or Instructional Supervisor
Immediate Supervisor
Prepares report & recommendations
Director of Instruction establishes district-wide committees. Supervisor is a member
Committee conducts study & prepares report & recommendations
Curriculum Council
Establish a priority list for studies and study committee to review proposals
Analyze & evaluate workshop proposals
Review reports of Study Committee & Workshop; formulate recommendations to Administrative Council
Supervises approved changes in course of study
Study Committee conducts study
Prepares report & recommendations
Workshop held
Prepares report & recommendations
Administrative Council
Superintendent formulates Committee
Reviews report of Study Committee & of Curriculum Council; formulates recommendations to Supt.
Committee conducts study
Prepares report & recommendations
District Superintendent
Reviews reports from Adm. Council. Prepares recommendations for Board of Trustees
Board of Trustees

[a]The heavy line represents the most frequently employed process for instructional change.

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III. THE INPUT DIMENSION

Deciding how available resources could best be used to meet the goals of the pilot investigation was the aim of input evaluation. Prior to the selection of the R & I Unit model for further testing, several other arrangements which ostensibly assisted school personnel in using research and development information were examined. Among the arrangements assessed were the conventional school research office, the research council and the regional supplementary educational center. The arrangements were studied by the principal consultant in terms of their budget and staffing requirements, the extent of their development, and their ability to function at the local district or school level. After the experimental model and school were chosen, Laboratory and District personnel traveled to sites in Wisconsin and Ohio where R & I Units were in operation. A result of the field visit was a decision to pilot test a modified version of the original Wisconsin model. The revised model was more suitable to the needs of high school teachers and it emphasized the conduct of planning and research activities by the R & I Unit members themselves.

For input evaluation information, the investigators relied mainly on the professional literature, interviews, questionnaires, and consultants. Because standardized methods for input evaluation were lacking, it was necessary for the project directors to devise attitude questionnaires, task analysis procedures, and cost/benefit rating scales on an ad hoc basis. However, the illusiveness of some variables and the dearth of reliable instruments such as cost/benefit precluded adequate assessment. Examples of the structuring decisions made with input evaluation data were budget and staff requirements, modification of physical facilities, and specification of procedures.

Financial Resources

The pilot activities were supported by means of District funds, Laboratory funds and the U. S. O. E. small project grant. Table 1 contains cost estimates for supporting these activities in terms of their source. It should be pointed out that the Laboratory funds supported all research and development activities pertaining to the project including costs of pre-operational orientation, planning and training activities for district personnel, intervention and evaluation activities during the operational phase and reporting activities, including dissemination. U. S. O. E. funds covered the costs of employing a full-time substitute teacher to free the Unit teachers for planning one hour per day, hiring a clerical aide for six hours each week, and miscellaneous costs such as travel, supplies, and final report preparation. All other costs incurred in the project were absorbed by the District. The latter include salaries of key central and school administrative staff and reimbursement of Unit personnel for the summer preoperational planning and training sessions.

Considering that Federal funds may not always be available to partially support such a project, a district wishing to initiate an R & I Unit should be prepared to spend at least an additional $19,000 per unit for the first year of operation.

TABLE 1

COST OF PILOT ACTIVITIES

Source of Funds	Pre-operational Phase Dec. 1967 - Sept. 1968	Operational Phase Sept. 1, 1968 - July 31, 1969	Total
Laboratory	$3,558.00	$26,685.00[a]	$30,243.00
District	3,617.00	5,765.00[b]	9,382.00
U.S.O.E.	0.00	9,752.00	9,752.00
Total	7,175.00	42,202.00	49,377.00

[a] This estimate is based upon actual costs through April 30, 1969, plus projections extrapolated from personnel time commitments.

[b] The projected estimate based upon compensation for actual time commitments made by Unit teachers in order to sustain the Unit (additional hours spent beyond the normal working day) is $12,070.00.

The district expense would decrease to approximately $15,000 for each succeeding year, once orientation activities were no longer required. It should be pointed out that the R & I Unit teachers at Redwood required additional time, for which they received no compensation, beyond their one hour per day released time allotment, in order to sustain the operation of the Unit.

Personnel Resources

At least fourteen people shared responsibility for conducting the pilot test, but members of the R & I Unit assumed the key roles in the study. The Unit teachers were an eclectic group in terms of their academic training. Among the disciplines represented were political science, history, music, anthropology, and psychology. The Unit leader, who was also department chairman and Curriculum Associate, had been in education for eighteen years. He was considered an astute diplomat by his colleagues and he took an active part in the diverse activities of the Tamalpais District Teachers Association (T.D.T.A.). None of the Unit teachers had had as much actual teaching experience as the Unit Leader, but one member of the team had earned his master's degree. Although two of the Unit teachers had been exposed to statistics in college, the Unit as a whole had no formal research skills when the study began.

In some respects, the enthusiasm and zest for teaching displayed by the Unit teachers may have compensated for their lack of experience. One indication of their desire to increase their competence as teachers was the fact that they voluntarily devoted numerous hours to R & I Unit activities without compensation. Given individuals who were relatively unskilled in research and development techniques, the project directors were probably unrealistic about the goals they set for the first year of the study. This assumption is at least partially corroborated by the fact that the actual time commitments of all personnel associated with the pilot study (except that of the teacher aide) rose above the anticipated amount. If the R & I Unit model is to be considered a practical alternative to the traditional self-contained classroom, it will be necessary to revise the model so that it does not make exorbitant demands on the teachers' extra time. As the Unit Leader said during a meeting of the Research and Development Council, ". . . in all honesty I believe that if teachers knew how much extra time it required to participate in an R & I Unit, the idea would turn off."

Role definitions for participating personnel

Job descriptions for those persons involved in the R & I Unit at Redwood can be extracted from the results of a questionnaire item administered to all participants at the conclusion of the pilot study. Respondents were asked to indicate for which of a list of functions they had assumed primary responsibility, had shared responsibility, or had been consulted. See Table G in the Appendix for the results of this questionnaire survey.

The responsibilities of the Unit teachers centered around day-to-day instruction, planning and administering various R & D activities related to instructional improvement, assisting with the evaluation and reporting of the Unit's instructional program and its R & D activities, and diffusion of information about the Unit to other school and district personnel and to the home community. In addition to providing leadership for these tasks, the Unit Leader acted as primary liaison between the Unit team and other district, school, and Laboratory personnel. He also shared responsibility with school and district administrators for providing initial staff and facilities and for planning the R & I Unit teachers' schedules to provide released time. The Redwood High School Principal responded that he had been primarily responsible for the provision of initial staffing, provision of facilities and equipment, and coordination of the Unit's operation with the program of the entire school.

The Superintendent, the official Project Director, provided leadership in organizing and implementing the R & I Unit in a district high school, obtaining funds for the support of the Unit and coordinating the Unit's operation with the program of the entire district. He assumed primary responsibility for the submission of all financial and evaluation reports required by the funding agency. The Superintendent received assistance from other central staff administrative personnel in the observation and evaluation of the R & I Unit's actions and processes, preparation of reports and evaluative studies on the Unit's progress, and performance of the liaison role between the District and Laboratory staff. The District Social Studies Supervisor under whom the Unit members taught mostly helped to obtain instructional materials for examination by the Unit and materials for in-service training of the team. He helped arrange in-service experiences for the team and himself assisted the Unit with their needs assessment and information search activities.

The questionnaire responses indicate that there was a great amount of shared responsibility during the conduct of the pilot study. The functions which were shared by many persons were those concerned with initial organization of the Unit and its coordination with the entire high school and district programs, evaluating and reporting the results of the Unit's activities, providing guidance to the team in the selection of its R & D problem and obtaining materials for use by and training of the Unit teachers.

Interest, Knowledge, and Attitudes of Personnel Toward R & D Activities

In order to assess the level of interest, knowledge, and attitude toward educational research and development activities, selected District personnel were asked to complete a questionnaire prepared by Laboratory staff during the Spring of 1968 and a follow-up revised form of this questionnaire in the Spring of 1969. Replies to the 1968 questionnaire were received from 23 of the 39 recipients in the sample (59%), while 17 of 19 recipients (90%) returned the 1969 questionnaire. See Table H in the Appendix for an enumeration of the response groups. The questionnaire results permitted pre-post comparisons (i.e., 1968 to 1969) for the R & I Unit team and inter-group comparisons between the R & I Unit 1969 responses and the responses of other Social Studies teachers at Redwood High School and of American Government teachers in other District schools.

Respondents were asked to indicate their interest in new curriculum developments, new teaching methods and various special topics by using a four-point rating scale ranging from strong interest to no interest. See Table I in the Appendix. The R & I Unit's mean interest level in new curriculum developments was slightly lower in 1969 than in 1968, and was lower than the means for either comparison group. The R & I Unit's strong interest in Social Science and Art and Humanities was sustained in the 1969 survey, whereas their former strong interest in Reading developments had declined. The interests of the comparison groups deviated very little from those of the R & I Unit. The R & I Unit's mean interest level in new educational methods and technology had increased in 1969, and was higher than either of the other groups. Their increased interest was primarily directed toward new items which had been constructed from open-ended responses to the 1969 questionnaire. The R & I Unit expressed continued interest in Team Teaching, as well as new interests in Interdisciplinary Approach to Content, Simulation Techniques, Inquiry Discovery Method, and Pass-Fail Grading. There was a consensus of strong interest in Emphasis on Student Values and Attitudes Rather Than Content, which received the maximal rating (4.0) from all three groups. The other Social Studies teachers agreed with the R & I Unit on all the above-mentioned items, while the American Government teachers expressed similarly high interest in Team Teaching ing and Interdisciplinary Approach to Content. Among the special topics presented in the questionnaire, all three groups of teachers agreed that the Problem-Solving Process was of considerable interest. The other Social Studies teachers at Redwood also shared the R & I Unit's high interest in Defining and Assessing Educational Objectives and the Changing Role of the Teacher. It is also interesting to note that the item for which the Unit expressed least interest was Research Structures for School Districts.

The 1969 questionnaire asked respondents to rate, on a four point scale, a list of educational innovations as promising or open to question (see Table J in the Appendix). The three groups agreed on the considerable promise of Inquiry-Discovery, the Interdisciplinary Approach to Content, and Teaching Methods Focusing on the Learner. The other Social Studies teachers agreed with the R & I Unit on the substantial promise of Specialized Teaching of the Culturally Disadvantaged. American Government teachers from other schools and the Unit team concurred on the high degree of promise of Team Teaching. The only educational innovations whose value was perceived as very questionable was the Raising I. Q. Experimentation in New York and Emphasis on "3-R" Curriculum.

Respondents were asked to estimate (1) what is currently being spent and (2) what should be spent, for educational research and development as a percentage of the total national expenditure for education. Response to item (1) is an index of knowledge or accuracy (when compared to what is actually spent on educational research and development, namely, one percent or less of the total national expenditure for education). The ratio of Item (1) to Item (2) is an index of attitude or enthusiasm, namely, their judgment of what should be spent in light of what they think is actually being spent on educational research and development. Table K in the Appendix shows that, in comparison to the other groups, the R & I Unit's 1969 judgments are both more accurate and enthusiastic about educational research and development. They were equally accurate and enthusiastic before the pilot study, however, as indicated by the minimal differences between their 1968 and 1969 ratings (these differences were primarily due to a change in format from open-ended to more structured categories for these estimates). Although the American Government teachers are not highly accurate, they are enthusiastic about educational R & D. The other Social Studies teachers have the least accuracy and enthusiasm concerning educational R & D.

A hypothetical educational research and development effort, called the XYZ Curriculum Project, was explained in a letter included in both the 1968 and 1969 questionnaires. This was followed by a series of questions to determine the respondents' readiness to participate in field testing of R & D and their estimates of other school district members' attitudes toward this proposal. The responses to these questions are shown in Table L in the Appendix. Although in 1969 the R & I Unit was more optimistic than they were in the 1968 survey about the reaction of most teachers in their district, they were less willing to participate themselves and were not as positive about the attitudes of the school administration and school board as they were in the 1968 questionnaire. The other Social Studies teachers were about as willing to participate as the R & I Unit, but the American Government teachers from other schools were less so. Non-Unit teachers perceived that most teachers in the district would be inclined to participate. As indicated in Table M in the Appendix, all teacher groups disagreed with the statement that "there are no attractive aspects of the proposal" and agreed with the attractiveness of the "opportunity to try innovations". The R & I Unit disagreed with the statement that "there are no unattractive aspects of the proposal", but agreed that "extra work and more questionnaires" was indeed an unattractive aspect of the XYZ Curriculum Project. The non-Unit teachers did not express agreement with any of the unattractive aspects listed. This possibly reflects the more realistic expectations of the Unit members, due to their personal experiences during the 1968-69 school year.

A section asking respondents to indicate the extent of their agreement with a list of ten statements about educational R & D practices was added to the 1969 survey. The results are summarized in Table N in the Appendix. The R & I Unit members agreed most strongly that statistical techniques in educational research are oversophisticated and that teachers do not use R & D information because it is not reported in an understandable form. There was strong agreement among all three teacher groups that teachers should be given reduced class loads for conducting research. The non-Unit teachers deviated considerably from the R & I Unit in their strong support of using classtime for research and active participation by administrators in research projects.

Table O in the Appendix shows that the R & I Unit depended somewhat less on conferences and informal personal contacts as sources of R & D information at the end of the pilot study, although informal contacts, along with professional journals, remained a most frequently used information source. The pilot study did stimulate their use of workshops and visits, which previously had practically never been used. The non-Unit teachers expressed a greater and more varied use of sources. They agreed upon the most frequent use of informal contacts and public media. When requested to rank seven characteristics of an information service according to importance, the three groups expressed consensus as to the importance of easy access to information and currency of information, and the unimportance of thoroughly documented research data (see Table P in the Appendix).

The 1969 questionnaire also presented a list of 24 Social Studies projects currently under development, for which the respondents were to indicate the extent of their knowledge on a seven point scale. As shown in Table Q in the Appendix, the entire sample population indicated an extensive lack of knowledge of the projects, i.e., all three groups replied "never heard of project" to at least 50% of the list. However, the R & I Unit did have more knowledge of the projects than the non-Unit teachers.

Training Activities in Knowledge Utilization Skills

To equip the R & I Unit team with the skills required to perform the highly technical knowledge utilization skills outlined in the preceding section, Unit members participated in both pre- and in-service training sessions. With the exception of the two week pre-operational Summer Planning Seminar, the functional operations approach to training was used. In other words, most of the training was unstructured rather than structured. The functional approach depends on the ability of the trainer to diagnose and spontaneously generate or retrieve training exercises and materials to meet perceived needs.

A concerted effort was made by the Laboratory staff to collect relevant training materials, but unfortunately few were available, and most of those could not be used without extensive revision. Since ad hoc methods are usually nonreplicable and expensive in terms of personnel commitment, prototype training materials in knowledge utilization should be developed prior to the further field or operational testing of the R & I Unit. Materials and techniques for (a) the proper selection, orientation, and motivation of personnel towards the R & I Unit as an arrangement; (b) the training of personnel in the proper organization of instructional time, use of paraprofessional aides, and the techniques of team operations are also needed.

The positive and negative aspects of the training were judged on the following criteria: the quality of the reports and other Unit products; the teachers' ratings of the utility of the techniques acquired; and the teachers' perceptions of the quality and effectiveness of the training methods used by the Laboratory staff and/or outside consultants. Table R in the Appendix summarizes the content of the Summer Planning Seminar in terms of topics, personnel involved, materials used, and general conclusions reached.

Members of the R & I Unit were asked to rate the fourteen training methods that were employed to teach them seven specific planning and research skills. The results are presented in Tables S and T in the Appendix. Several tentative conclusions can be drawn from this data. Unit members obviously preferred training methods which involved them in personal interactions with each other and/or the Laboratory consultants. It is also clear that the Unit teachers considered participation in workshops like the Summer Planning Seminar, a more palatable method of receiving training than using materials, such as the Problem Formulation Guide devised by the Laboratory consultants.

When asked to rate the usefulness of ten research skills involved in problem formulation, Unit members stated that designing an evaluation scheme was the most difficult and least useful task. While writing behavioral objectives was considered the second most difficult task, it was also thought to be the most useful task (Redwood High School, R & I Unit, April 17, 1969). Further information on teacher interests comes from responses to a Laboratory-devised Q-sort selection of those "knowledge utilization" skills that school personnel said they would be most interested in learning. The R & I Unit members and several non-Unit teachers from their District were included in the Q-sort sample. Teachers ranked analysis of present program and preparing performance objectives as areas in which they were most eager to receive training, followed in order by needs analysis and processing of information related to problem solution.

While the findings are far from conclusive, they tend to support the hypotheses of human relations theorists such as Chris Argyris, Everett Rogers, and Matthew Miles. Their studies indicate that certain interpersonal relationship variables may be among the most important variables to consider in implementing and maintaining innovations within educational or research organizations. If the R & I Unit members are at all representative of public school teachers, then the results reported above portend trouble for individuals who are attempting to develop packageable self-instructional training materials for educators. This is not meant to suggest that a "warm bodied" consultant should be included in every training kit, but it should serve as a warning to those who believe that there will be a market for educational materials which are not available in a form that the user finds acceptable.

IV. THE PROCESS DIMENSION

Process evaluation was multivariate and entailed continuously monitoring potential problem areas and devising strategies to solve the problems as they arose. Because of their fluidity, all process variables could not be specified before the project began, but in general they included interpersonal relationships, communication and decision-making channels, physical facilities, adequacy of resources, and time schedules. Feedback from process evaluation was used to make implementing decisions. Scheduled and unscheduled observations, content analysis of time logs and tapes, Q-sorts, and interviews were used most frequently in collecting process data.

Once planted within Redwood High School certain characteristics of the R & I Unit as a temporary social system began to emerge. A temporary social system has the following distinct traits according to Matthew B. Miles: (1) participants expect the temporary system to terminate at a specified time, and (2) the possibility that the temporary system could become permanent is never in the foreground, is frequently indeterminate, and is usually completely out of the question. Some of the most noticeable features of this temporary social system were role definition, goal redefinition, planning procedures, time use, team traits and utilization of resources. The ensuing remarks focus on problems which occurred as these features evolved.

A comprehensive idea of the major activities which comprised the process can be gained by reading the calendar of events presented in Table U in the Appendix. It should be mentioned that while Unit members eventually completed a full (if superficial at some points) knowledge-utilization sequence, they deviated markedly several times from the initially proposed course of events. More time than had been anticipated was required at almost every step in the cycle. Because the needs assessment phase covered four months instead of the expected two, a major reconstruction of plans was necessary in February. The revised plan allowed the team to satisfy their desire to develop Parallel Micro-Units, and simultaneously concentrate on the acquisition of additional research utilization skills by using one Parallel Micro-Unit as the basis of their problem formulation study. A reading of Table U in the Appendix shows that there were significant deviations even from the revised plans.

Role Definition

Because Unit members were asked to act cooperatively rather than independently and to combine research functions with their regular instructional tasks, certain role changes were a natural outgrowth of the pilot study. The Unit members experienced difficulty in attempting to effectively correlate their research and instructional duties. Apparently, the demands of daily instruction were at times more compelling than those imposed by the pilot study because there seemed to be a recurring tendency for instruction to supersede research. That the drift seems to be in the opposite direction at the university level is intriguing and lends support to the hypothesis that the fusion of the two functions has a debilitating effect on either the instructional or the research program. Projects exploring methods of coordinating instruction and R & D which are currently underway (i.e., Differentiated Teaching Staff and The Model for Planned Education Change Project) and any future studies in this area should carefully examine the possible dysfunction between two roles.

Goal Redefinition

Discrepancies in the perceptions of various subgroups - Laboratory consultants, Central Staff, and R & I Unit - about the goals of the pilot study were revealed by informal interviews and the results of questionnaires. It was found, for example, that three of the eight weaknesses of the R & I Unit arrangement most frequently cited by Unit members themselves related to confusion concerning the goals and aims of the pilot study. Not only were Unit members uncertain about the goals of the pilot test, they were also unsure about the rationale, goals, and behavioral objectives of their current course in American Government. Their inability to translate their broad goal of getting students to look at themselves and their environment into specific behavioral terms which all were committed to produced occasional factionalism and unproductivity in some group members.

Planning Procedures

Repercussions which resulted from initial inadequacies in planning, orientation, and training activities were felt for the duration of the study. In an attempt to take full advantage of the Unit's time, needs assessment was begun in the Spring even though training sessions were not scheduled until August. Consequently, the instrument was selected and administered before Unit members had an understanding of the entire needs analysis process. The training sessions which were held were apparently too general because Team members experienced difficulty when they tried to formulate a detailed plan for conduct, analysis, and reporting of the needs assessment and problem formulation activities. The fact that an introduction to statistical techniques and methods of report planning were not included in the summer training sessions was an unfortunate oversight. Belated efforts to teach statistical applications met with resistance from Unit members. The inference is statistical presentations made to public school teachers should probably be limited to simple statistical treatments and should emphasize the time-saving aspects of their use.

A unique aspect of the Unit's planning style was its tendency to initially resist or deflect suggestions from Laboratory consultants and then later adopt the same or very similar ideas. On the basis of such experiences, Laboratory consultants concluded that the Unit teachers were more prone to act on ideas which they perceived as their own, and that sometimes a period of time had to pass before an idea was perceived as good or practical by the Unit members. On a few occasions, the consultants successfully counteracted the expected resistance by discussing their ideas with individual Team members, who subsequently introduced the ideas to the Unit.

Unit members demonstrated minimal interest or skill in making long-range plans. The Unit Leader acknowledged this deficiency on the part of most teachers when he said, ". . .teachers just haven't been thinking about what they are doing, how they are going to do it, and how they are going to know whether or not they have done it. Now everyone is trying to get in the act. (The Business Manager) wants us to write objectives so that we can prove to everybody that we're actually teaching something here."

This apparent lack of concern for long-range planning partially due to their absorption in the exigencies of the present. During the last few weeks of the pilot test, however, the Unit Leader met privately with Laboratory consultants to discuss his reactions to the pilot study and his plans for the future. His commitment to the concept of joint planning was indicated by the fact that he has arranged for all Social Studies teachers who teach the same subject to have the same conference periods.

Time Use

Whether or not Unit members were given enough released time to accomplish their assigned tasks is a complex question. All Team members were allocated one hour per day to perform Unit tasks, but immediately after school commenced in the fall, they felt a need for additional planning time. Commitment to the pilot study motivated them to regularly devote time to the project after school without financial compensation. They requested that their joint planning period be changed to the last period of the day during second semester so that they could carry their work into the after school hours when necessary. The logistics of rescheduling students assigned to American Government during seventh period prevented such a change.

It can be argued that providing the teachers with released time for planning increased their expectations and motivated them to try new things they ordinarily would not have attempted. Members of the Unit made statements to this effect on several occasions. One Unit teacher told members of the District's Research and Development Council that opening the lid of an R & I Unit was like opening Pandora's box because when teachers were exposed to so many good things, it was difficult for them to postpone an attempt to implement as many of the new ideas as possible. Other Unit members said that, although the year had been physically taxing, it had also been the most exciting and challenging year they had ever had as teachers.

The year-long controversy which raged over District unification diverted a substantial amount of energy which Team members might ordinarily have spent on Unit functions. While a cursory examination of R & I Unit meeting minutes reveals that Unit members often blamed their lack of preparation on involvement with unification problems, it is hard to ascertain the exact degree to which they interfered with the outcomes of the project.

While few educators would disagree with the proposition that teachers need more time for planning and evaluation, we do not have enough data to decide what mix between instructional and research activities is best. Even knowing the proper mix would not completely solve the problem. Many teachers find it difficult to disengage themselves psychologically and physically from the demands of their ever present students and instructional tasks. Therefore, a mechanism to assist teachers in making this role conversion would need to be developed.

Utilization of Resources

The minutes kept by the Laboratory consultant who acted primarily as the observer-recorder are replete with examples to support the conclusion that the Unit teachers rarely used resources which were not available right within the high school. One Unit member who was assigned to establish a multi-media Social Studies Resource Center at Redwood High School would not search the E. R. I. C. (Educational Resources Information Center)) document collection in the District Office file which was only a block away because he said he did not have time. Even when articles pertinent to particular research skills were collected by the Laboratory consultants, Unit members usually did not read them. The reason for this, according to one Unit member, was that they needed to have "stuff in a digested form or as an abstract and then we can get through more of it. Because the articles took so much time to read, we found them ineffective".

The results displayed in Table S in the Appendix show that Unit members considered the Laboratory consultants their most useful resource. The consultants met regularly with the Team to assist them in solving the problems they encountered with their research activities. There were several critical junctures when the Unit's progress would have been severely impeded if they had not acted on the advice of the consultants. The principal consultant selected exemplary instruments for the Unit's initial examination of needs assessment questionnaires and standardized achievement tests. He also helped them select appropriate statistical treatments to analyze the data gathered with these instruments. In addition, he designed several brief questionnaires and a problem formulation guide for training purposes.

Teaming Traits

Possibly because needs assessment was viewed by all Unit members as an effective means of improving instruction, the team functioned most cohesively during the four months it was engaged in needs analysis. It should not be inferred from this, however, that at this or at any other time during the pilot study, Unit members were equally socialized, that is, effectively participating in the immediate system. Only three of the five Unit members were consistently active in both planning and implementation activities.

Much of the data collected from non-R & I Unit members indicated that very little accurate information concerning the Unit was diffusing throughout the school. When the Social Studies Instructional Supervisor was asked by the principal Laboratory consultant why so few people were informed about the Unit, he said that Team members had told him they were reluctant to disseminate their findings until they had tested and refined them. That Unit members felt uncertain and insecure about their new roles was not surprising. Since District and Central Staff members rarely, if ever, attended Unit meetings, it is probable that they were not perceived as supportive by Unit members. This feeling of lack of support may have heightened their sense of insecurity and isolation.

V. THE PRODUCT DIMENSION

The first step in product evaluation was defining operationally the criteria which would be used as standards for evaluating the effectiveness of the R & I Unit arrangement on a pre- and post-test basis. An assessment by a panel of the hard products and innovations developed by the R & I Unit team was also required. Questionnaires and interviews were used to obtain information about the participants' satisfaction with the R & I Unit arrangement and about its perceived strengths and weaknesses.

Rating of Hard Products by Panel of Judges

Near the end of the pilot study, nine district administrators and educational consultants who were familiar with the objectives and activities of the R & I Unit were given a Product Rating Guide to use in evaluating four products developed by the R & I Unit at Redwood High School. The products were: a set of Preliminary Planning documents, a report of their Needs Assessment Study, a report of their Problem Formulation procedures, and a description of the innovative Parellel Micro-Unit class structure. Respondents were asked to compare the quality of these products with their evaluation of typical products from R & D projects of (1) classroom teachers not associated with the R & I Unit, (2) district administrative or supervisory staff, and (3) county office or Supplementary Education Center personnel. The R & I Unit's products were compared to products of each of the other three groups, on a five-point scale ranging from clearly superior to clearly inferior. Replies were received from six of the sample. See Tables V and W in the Appendix for complete results.

The judges perceived the products of the Unit team as above average in quality. The R & I Unit products compared most favorably with those produced by other teachers, against which they received a clearly above average rating (4.19). They were judged slightly better than average in comparison with district (3.47) and county office (3.47) products. Relative to products of all other groups combined, the R & I Unit products were judged most superior in their interest level, both for the judges themselves and "for other school personnel", and in their usefulness for formulating instructional plans and for deciding on instructional alternatives. The lowest ratings relative to products of all other groups combined were for organization and format, validity of results, and adequacy of methods and processes by which data were collected and analyzed. In comparison with products prepared by all other groups, the Needs Assessment report received the highest rating of the four exemplary products (4.02); followed by the R & I Unit's own classroom innovation, the Parallel Micro-Unit (3.87); the Preliminary Planning documents (3.55); and the Problem Formulation report (3.43).

Participants' Satisfaction With Operation of R & I Unit

In May, a questionnaire was submitted to members of the Unit team and to other high school and central staff personnel who were not members of the Unit, but who knew something about it. One portion of the questionnaire asked respondents to indicate how satisfied they had been with various aspects of the R & I Unit's operation on a five-point rating scale ranging from very satisfied to very dissatisfied. A complete tabulation of the results can be found in Table X in the Appendix. The aspects which elicited greatest satisfaction or dissatisfaction from the respondents are summarized in Table 2.

In general, the areas of greatest satisfaction to all respondents seemed to be the contribution made by the Laboratory staff, student performance, and material support for the Unit in the form of funding and provision of necessary supplies and equipment. The R & I Unit members consistently rated items less satisfactory than did the other respondents. The greatest discrepancy was on "level of instruction which students receive in Unit," which may reflect modesty and natural professional desire for continual improvement on the part of the R & I Unit teachers. Greater discrepancies were found in the areas of dissatisfaction. Unit members isolated "organization and work procedures" and "orientation to Unit's function and activities prior to initiating operation" as being most unsatisfactory, while these items received quite satisfactory ratings from personnel not participating in the Unit. Other high school and district personnel indicated greatest dissatisfaction with "physical facilities for Unit" and "amount and quality of clerical assistance," while the R & I Unit members themselves indicated less dissatisfaction with these aspects of the Unit's operation.

An examination of Table X in the Appendix reveals that, of the eight items referring to instruction received by the R & I Unit in various techniques of research utilization, Unit members were most satisfied with the instruction in needs assessment, problem formulation, and evaluation. They perceived the instruction in long-range planning and decision-making as least satisfactory. This table also indicates that the average level of satisfaction on all items was substantially lower for the R & I Unit members (3.19) than for other respondents (3.91), very likely due to their direct involvement in the operation of the Unit and, consequently, their more realistic perceptions.

An indication of the level of student satisfaction with classes taught by the R & I Unit teachers can be found in the results of a student poll administered by the Redwood High School student newspaper. Thirty-one percent of the Redwood student body was polled. When asked whether they felt their class was stimulating, instructive but not stimulating, bearable, or boring, 43.3% of the senior American Government students (those taking R& I Unit classes) replied that their class was stimulating. In contrast, only 22.8% of the other social studies students felt their class was stimulating. Only 12.8% of the American Government students found their class boring, while 31.4% of the other student respondents were bored with their class.

At the end of the 1968-1969 academic year, the R & I Unit teachers attempted to determine whether they had been satisfying the needs of their students. They readministered the needs assessment questionnaire which had been given to students in the

TABLE 2

SATISFACTION WITH OPERATION OF R & I UNIT[a]

	R & I Unit Personnel	Non-Unit District Personnel
Areas of Greatest Satisfaction:		
Services provided by Laboratory Staff	4.20[b]	4.86
Level of Instruction in Unit	3.00	4.86
Social Interaction of Students	4.00	4.63
Provision of Equipment and Supplies	4.00	4.60
Training in Needs Assessment	3.80	4.60
Financial Support for Unit	4.20	4.43
Level of Student Behavior	4.00	4.13
Areas of Greatest Dissatisfaction:		
Provision of Clerical Assistance	3.80	2.20
Physical Facilities for Unit	2.60	2.33
Daily Work Schedule	2.50	3.00
Time Allotment	2.50	3.00
Organization and Work Procedures	1.60	3.50
Training in Long-range Planning	2.80	3.50
Adequacy of Pre-operational Orientation	2.00	3.71
Overall Work Plan and Calendar	2.50	4.00

[a] List is composed of the five areas of greatest and least satisfaction identified by each group. (See Table X in Appendix).

[b] Responses were made on a five point scale ranging from five (very satisfied) to one (very dissatisfied).

fall. A random sample of 50 of the questionnaires was used for an analysis. Generally speaking, most students needs had been touched or dealt with to a large extent during the school year.

Perceived Strengths and Weaknesses of R & I Unit Arrangement

In Table 3 are shown the most noteworthy results from a section of the questionnaire in which respondents rated the importance of possible strengths and weaknesses of the R & I Unit, using a four-point scale ranging from great importance to no importance. See Table X in the Appendix for a complete tabulation of the results. The R & I Unit members perceived the teaming aspects of this arrangement as its greatest strengths. The two strengths identified by the Unit team as most important were "an opportunity to compare and discuss educational philosophies, theory and educational methodology" and the establishment of a "small, capable team." Neither of these items were among the top five strengths identified by non-Unit personnel. The other high school and district respondents perceived as the greatest strengths those factors relating to the provision of extra released time for training, for planning, and for implementing the results of this planning. The greatest discrepancy between Unit and non-Unit personnel was for "time for planning," the number one strength identified by non-Unit personnel. Apparently, the Unit members felt that the provision by the R & I Unit arrangement of one hour released time per day had not, in actuality, been sufficient time for planning. Also, the R & I Unit team did not perceive that a "continuous process of developing and testing of products" had been as strong a characteristic of the R & I Unit arrangement as did other high school and district personnel. All respondents tended to agree on the importance of "released time" and the provision of an "opportunity to involve students and parents."

There was also substantial disagreement between R & I Unit members and non-Unit respondents as to the major weaknesses of the R & I Unit arrangement. The Unit members seemed to feel that the greatest difficulty lay with overexpectations of what a group of teachers is capable of doing. They rated "it is difficult to teach and research at the same time" and "the Unit may be overeaching" as the two most important weaknesses. The greatest discrepancies between average Unit and non-Unit responses were on these two items. Apparently, other personnel in the district did not perceive the importance that this role problem would constitute for participating teachers. The non-Unit respondents assigned highest priority to the items concerning the lack of time to carry out Unit activities. The rating of the Unit members on these items supported the conclusion that the inadequate time allotment had had a detrimental effect on the Unit's achievements. There was also general agreement among all respondents as to the importance of those items relating to uncertainty about aims and objectives. Apparently, there was a general belief that the lack of clarity, at the outset, about what the R & I Unit was supposed to accomplish during the pilot study substantially hindered its potential accomplishments and the effective role development of the team members.

A supplementary question asked for the respondents' opinions as to the

TABLE 3

MAJOR STRENGTHS AND WEAKNESSES OF R & I UNIT[a]

	R & I Unit Personnel	Non-Unit District Personnel
Strengths		
Time for planning	2.00	2.94
Released time	2.60	2.81
Classroom implementation of planning	2.40	2.75
Product development and testing process	2.00	2.63
Student and parent involvement	2.60	2.56
Small, capable team	2.75	2.50
Opportunity to compare philosophies and methods	2.80	2.25
Weaknesses		
Lack of time to learn Research and Development	2.00	2.00
Lack of time to perform tasks	2.20	2.00
Uncertainty about aims	2.25	1.94
Members' uncertainty about objectives of Unit	2.00	1.86
Overemphasis on daily problems	2.25	1.86
Members' low consensus on instructional goals	1.80	1.86
Overdemands of district problems on Unit's time	1.40	1.86
Difficulty of combining teacher and research roles	2.80	1.64
Unit may be overreaching	2.40	1.38

Note. Responses were made on a four point scale ranging from 0 (no importance) to 3 (great importance).

[a] List is composed of the five major strengths and weaknesses identified by each group (See Table X in Appendix).

comparative importance of the R & I Unit's strengths and its weaknesses. As indicated in Table 4, an overwhelming majority (91.7%) of the non-Unit respondents replied that the strengths outweigh the weaknesses. However, none of the R & I Unit members themselves gave this response; half believed the weaknesses were more important and half believed the strengths and weaknesses were equally important.

TABLE 4

COMPARATIVE IMPORTANCE OF STRENGTHS AND WEAKNESSES

	R & I Unit Personnel	Non-Unit District Personnel
The strengths of the R & I Unit outweigh its weaknesses.		11
The weaknesses of the R & I Unit outweigh its strengths.	2	
The strengths and weaknesses are of equal importance	2	1
No response.	1	4

Summary of Project Outcomes

In the prospectus for the pilot study it was hypothesized that the R & I Unit might offer a superior structure as compared with the self-contained classroom for supporting activities related to the acquisition and use of research-related information for improvement of the instructional program. It was speculated that, by using a mechanism such as an instructional subunit within a school system (in this case a group of secondary teachers of American Government), the skills and functions involved in the rational implementation of R & D information could feasibly be acquired and used by classroom teachers. The specific skills in which the teachers received training were needs analysis, problem formulation, information search for alternative solutions, evaluation of hypothetical solutions, and decision-making and planning skills. The previously delineated findings of this pilot study indicate that the teachers who participated in the R & I Unit arrangement did learn to use certain of these knowledge utilization skills to improve their American Government course.

Evidence of Acquisition of R & D skills by R & I Unit Teachers

In retrospect, the fact that the R & I Unit teachers, as individuals who had never before been involved in formal research, were able to complete an acceptable needs assessment, problem formulation, and evaluation of an original innovation, as well as put to use some systematic planning techniques, is quite encouraging. No attempt was made to formally assess how well the Unit members had learned these knowledge utilization skills. Evidence supporting their acquisition of planning skills was elicited by asking Unit members to perform a simulation exercise. Unit members were asked to assume that they had submitted a proposal requesting funds to conduct a series of planning sessions prior to the beginning of the 1969-1970 school year, that the proposal had been approved, and that funds had been allocated for the sessions. The assignment given Unit members was to describe the content of the sessions they would organize in order to investigate methods for meeting one of the student needs identified in the 1968-1969 Needs Assessment Study. Unit members were given the instructions for the task a day in advance, but they had only one hour to complete the exercise.

Unit members responded that about two or three weeks would be needed for the planning sessions. Since they felt that productivity decreases in group sessions which exceed four hours a day, they decided to devote three to four hours a day to joint planning sessions and the balance of their time to independent study. The following briefly sets forth the sequence of activities, not necessarily a day-by-day schedule, planned by Unit members:

1. Develop a specific definition of the need area by synthesizing various interpretations of the need statements. The services of a consultant would be acquired to assist them with this task.

2. Develop an outline of the units to be taught during the academic year which would respond to the identified need.

3. Construct behavioral objectives for each unit outlined. A consultant would help them with this task also.

4. Prepare teaching strategies and techniques to meet these objectives.

5. Order needed materials. Arrange for outside agencies to demonstrate new materials available.

6. Hire a consultant to discuss innovative methods and techniques that might help them to accomplish their objectives.

This simulation exercise provides an assessment of the less tangible outcomes of the pilot study, i.e., changes in individuals' attitudes and behavior. The sequence of planning activities developed by the Unit members seems to demonstrate that they had internalized enough understanding of certain knowledge utilization skills to feel confident about using them in the future. Their plan to ask professional consultants to assist them with these tasks indicates that they had achieved a realization of the importance of clarifying need statements and of writing precise behavioral objectives. The decision to use outside consultants also reveals the Unit's preference for receiving information via personal interactions. This is corroborated by the following remark made by a Unit member, "We must have someone who is willing to sit with us and give us feedback about the objectives as we write them. We have seen enough generalized lectures, filmstrips, and read enough theoretical texts, but now we need someone to help us apply this information to our specific problem."

The initiation of a Planning, Programming, Budgeting System by the District Business Office afforded an opportunity to observe how well the specification of instructional objectives had been learned by the Unit team. The Business Manager requested that all Subject Matter Department Chairmen prepare a statement of their objectives for the upcoming year to accompany their budget requests. In comparison with the statements prepared by other department heads, the R & I Unit Leader (chairman of the Redwood Social Studies Department) demonstrated a substantially better understanding of what an instructional objective should be.

During the pilot test, participants demonstrated a willingness to involve themselves in making extensive changes in the Social Studies program offered at Redwood High School. For example, one Unit member attended a preview sponsored by the Far West Laboratory for Educational Research and Development of new secondary Social Studies curriculum programs being developed. He became so enthusiastic that he initiated a cooperative effort between the Laboratory and the Redwood Social Studies Department that would enable his colleagues to review some of these new materials. Small teacher teams were organized to study student and teacher manuals for each of two new programs (namely, Sociological Resources for the Social Studies, and the High School Curriculum in Government Project) and to report their evaluations of the programs at department-wide sessions. Teachers' comments at these sessions indicated that they were seriously contemplating substantial changes in the structure of their Social Studies curriculum (i.e., teaching American Government in ninth instead of twelfth grade, more extensive use of Inquiry-Discovery methods, or adoption of one of the new curriculum programs).

Another affirmation that the instructional program of the R & I Unit teachers improved through their exposure to and use of research techniques was provided from some unsolicited comments made by the Redwood High School Principal who, of course, had observed Unit members both before and after their R & I Unit experience. In a letter directed to the principal Laboratory consultant, the Principal remarked, "The experience has indicated the fruitfulness of utilizing on-going research techniques in terms of making real changes in program, in choosing the adoption of a new textbook or in writing a new syllabus." He added that, "The immediate testing and feedback has been stimulating and profitable. Without question the new course of study is significantly different and significantly better than the old American Government Course." He concluded with a few words of caution to those who might be unaware of the strenuous demands made upon participants in an R & I Unit. He said, "The experience has taught us that research units of this type should not be entered into lightly, but require careful planning in organization and on-going stimulation to significantly realize the benefits that might accrue. I would hesitate to offer this device on a blanket basis without being sure that teacher teams were genuinely committed to the work and effort that are necessarily involved."

Permanent Contextual Changes Derived from Redwood's Involvement in R & I Unit Investigation.

On the basis of advance plans made by R & I Unit teachers for the succeeding school year, it can be inferred that some of the beneficial effects of the arrangement will continue beyond the termination of the pilot study. The Unit Leader has become convinced of the value of joint planning time in stimulating teachers to initiate meaningful changes in their classes. He has revised his department's class schedule in order to provide all Social Studies teachers who teach the same subject with at least one conference period in common in which they may get together to share ideas and plans, if they wish. He also hopes to permanently incorporate more sophisticated evaluation techniques into his course. Next year, he plans to readminister a more advanced form of the standardized Civics test on a pre-post basis and some form of attitude survey to more effectively evaluate student needs in the effective domain.

The conversion of the Unit Leader to a belief in the utility of behavioral objectives also seems evident. Not only does he want the Social Studies Department to use them, but he also proposed to the Principal that the School Board consider giving all teachers at least one hour each week for the purpose of writing behavioral objectives for their courses. Other Redwood teachers apparently do not share the Unit Leader's enthusiasm for this type of systematic planning. When the Faculty Senate was given an opportunity to vote on several proposals which would provide released time for planning (i.e., one hour once a week, one hour twice a month, etc.), 40% of the votes were cast against any of the proposed alternatives.

Increased Understanding of Problems to be Dealt With in Implementing an Organizational Arrangement to Improve Teachers' Decision-making Skills.

Because organizational change is at once complex and essential, a thorough understanding of the factors which impede or support systematic change efforts is a prerequisite to the solution of education's pressing problems. The Redwood High School pilot study elucidated many of the complex problems involved in implementing and maintaining an innovation in a public school system. This increased awareness of the problems encountered in preparing teachers to use R & D important outcomes of this project. Some of the problems stemmed from inadequacies in the

R & I Unit model itself, but due to the present state of the art of effecting educational change, Laboratory consultants themselves were not always capable of preventing other problems from arising. For example, although an extensive surveillance effort was made by Laboratory staff to locate training materials for use with the Unit team, sufficient training materials appropriate to the Unit's tasks and appropriate for a teaching audience were not found. The consultants' inability to provide effective training materials for the R & I Unit apparently developed in the teachers a misconception of the difficulty of tasks like problem formulation and writing instructional objectives.

Innovation and change theorists are addressing themselves more frequently in the literature to the characteristics of the organizational environment which is conducive to innovation. The findings of this pilot study indicate that a major problem in trying to combine research and instruction roles within the school setting is the problem of time. Obviously, if teachers are going to assume new responsibilities such as research, they must be given additional time for this purpose. The documentation of this pilot study points clearly to the fact that the Unit teachers felt they were allotted an inadequate amount of time to conduct their planning and research activities. If educators themselves are to be expected to perform their own planning and research to nourish their instructional programs, appropriate mechanisms must be provided within the school system to provide the flexibility and time sufficient for these activities. Teachers involved in a project of this type must receive full administrative support. It seemed to be an avoidable hindrance to the progress of the Redwood R & I Unit that the Unit Leader should encounter insufficient administrative and clerical cooperation in his efforts to initiate schedule changes that would enhance the team's planning opportunities.

An additional problem concerns the difficulty of evaluating the cost/benefits of such an arrangement. While it was undeniable that the cost of operating the R & I Unit at Tamalpais Union High School District was great, several factors must be kept in mind. First, cost figures for the first year of operation would be significantly reduced thereafter, since costs for professional consultants and staff training would decrease or disappear completely. Second, there are, undoubtedly, methods for providing teachers with planning time without necessarily hiring additional teachers. For example, decreasing pupil-teacher load for Unit personnel; training para-professional assistants to release Unit teachers from instructional duties; and increased utilization of student teachers could all add planning time to teachers' schedules. Even moving toward the provision of more independent study time for students might free teachers to do planning. Evidence does indicate that, in time, training programs and well-defined personnel roles and functions for the R & I Unit could be developed and disseminated to other sites. To meet this expectation, cost reduction strategies for funding the arrangement entirely with district funds must be devised or this promising model for moving research into the classroom will have to be abandoned.

VI. SUGGESTIONS AND IMPLICATIONS FOR THE FUTURE

Implications for Those Interested in Training Teachers in Knowledge Utilization

Great expenditures are currently being channelled into the exploration of means for reducing the gap which exists between educational research findings and their application in the nation's classrooms. That the aim is a worthy one is quite clear, but the difficulties involved in achieving it at times appear awesome. Therefore, the experience gained in this study might prove helpful to others in avoiding problems or removing procedural barriers which seriously inhibited this study.

Inconsistencies in expectations about the outcomes of the project caused serious intergroup communication problems. The relationship between ultimate success and shared goals among group members has been emphasized in studies by Miles, Benne, and others. If the overall goals of a project are clearly understood and shared by all participants, commitment to achievement of those goals will increase also. Perhaps, the fact that the R & I Unit was not a fully-developed model hindered a specific explication of project goals from the beginning. Throughout the pilot study there was uncertainty among the participating teachers as to whether the Laboratory was really pursuing the same objectives as they were. From the inception of the study, the teachers justified their participation in the "experiment" by their hopes that the R & I Unit structure would help them to improve their classroom teaching. To them, the value of developing skills such as problem formulation, information search or evaluation techniques was not self-evident. In order to convince the teachers that the pursuit of these skills was worthwhile, a direct connection between their use and actual instructional improvement had to be demonstrated.

More and better methods and materials for training school people in R & D skills are needed. The Laboratory consultants found themselves in the embarrassing position of announcing their intentions to train the teachers to perform planning and research activities, and then being unable to locate well-developed instructional materials. There was no assurance that the sequence of research tasks through which the consultants were attempting to guide the R & I Unit teachers (analysis of instructional program, identification of crucial problems, formulation of possible solutions, search for information about the problems and/or solutions, classroom demonstration or field testing of solutions, and evaluation of solutions) was, in fact, a rational sequence or a workable sequence from the teachers' point of view. Another question which remains unanswered is with what degree of sophistication should classroom teachers perform statistical analyses of their surveys and projects, or need they perform them at all. Diagnostic tests to determine the specific skill deficiencies of school people and the tasks for which they particularly desire to receive training would be especially helpful. If possible, the extent of training desired by trainees should also be predetermined and agreed upon by all involved parties. In retrospect, most individuals involved with the R & I Unit project were convinced that far too much time had been devoted to the needs assessment phase of the project. District Central staff and even R & I Unit members felt that more superficial training and task performance in this area would have been satisfactory. On the other hand, it seems that the in-depth exposure to needs assessment not only enabled the Unit members to complete an excellent needs analysis, but also convinced them of its worth. In other words, if attitudinal and behavioral changes regarding the implementation of innovations and the classroom use of research are desired, in-depth training leading to reeducation might be required.

Implications for the District

Several avenues for effective cooperation between faculty members and administrative staff in the determination of paths to follow toward improved instruction have been explored throughout the study. Of course, it was participation by the administration in the establishment of the R & I Unit pilot study at Redwood that enabled the Unit teachers to benefit from professional consultants and joint planning periods. Administrators expressed their viewpoints in the selection of the R & D problems to be explored by the Unit team, and provided constructive feedback to the team by participating in the review and evaluation of their activities (i.e., at Research and Development Council meetings). Continued coordination of instructional activities between the two groups would probably be beneficial for the overall instructional program. Sharing in the performance of various knowledge utilization tasks in the future is a possibility for facilitating such cooperation. For example, design and analysis of needs assessment instruments could be delegated to qualified personnel at the District level. Or District automatic data processing facilities could be made available to teachers interested in using sophisticated evaluative techniques in their classrooms.

District staff could also consider using an R & I Unit-like arrangement occasionally as a deviceto stimulate laggard or unprogressive departments or clusters of teachers to revise their instructional programs. Another variant would be initiating such groups only on a voluntary basis, perhaps with the provision that teachers expressly interested in engaging in research activities could perform needs analyses, information searches, evaluations, etc., for an entire department and, thus, be allotted a lengthier period of released time.

Summary

The findings of this study seem to indicate that the R & I Unit did, in fact, offer an organizational climate which facilitated the use of R & D information for instructional improvement. Among the most important factors contributing to this improved climate are the following: The R & I Unit provides teachers with joint planning time. It permits instructional innovations to be field tested in actual classroom situations. It stimulates teachers to investigate alternative teaching methods, and to use information from research in making decisions. It increases teachers' self-confidence in planning their classes by providing them with a more rational alternative than assimilating random recollections from their readings and opinions from their colleagues.

It seems equally clear that the model is still underdeveloped in many ways and that more refinement is necessary before the arrangement can be considered operationally feasible. Because models for knowledge utilization are desperately needed in education, it seems especially unfortunate that the District was unable to continue the testing the R & I Unit. However, it does appear that news about the R & I Unit has been diffusing to some extent throughout the District. The Redwood High School administration is attempting to rearrange its class schedules for next year so that some of the joint planning features of the R & I Unit can be retained. It is possible that a group of English teachers at Redwood High School will incorporate some of the features of the R & I Unit structure in planning their own instructional program next year. Thus, the pilot study may eventually stimulate rather extensive change toward the increased utilization of R & D within the system.

Certainly, the capacity for instructional innovation based on the results of research, which is the primary goal of the R & I Unit arrangement, is necessary in the problem-ridden educational institutions of today. Thus, the statement made by the Unit Leader at an R & D Council meeting seems to best summarize the crucial question confronting all those interested in the R & I Unit as a vehicle for building research and development into the instructional process. He said that the real test of the R & I Unit approach would be whether or not instruction could be significantly improved on the basis of the type of research which an R & I Unit has the capacity to perform. Before that question can be accurately answered, the R & I Unit arrangement must undergo much more rigorous investigation.

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TABLE A.

Criteria used as a Guide in Selection for Site of Pilot Activities

Criteria Pertaining to the District in which the School is Located

1. The site was located a reasonable commuting distance from the Laboratory.

2. The Superintendent and relevant central office staff sense a need for creating within the District the capabilities for information search, field test, evaluation, and demonstration of research-related information prior to adoption.

3. The District was willing to act upon this need by providing the necessary financial, personnel, housing, and auxiliary instructional and business services for the initiation, development, and operation of the Unit at the local school level.

Criteria for Selecting the School Location

1. The school was presently engaged in the studies concerned with curriculum or instructional improvement or were receptive to initiate studies in this area.

2. The school was willing and able to reorganize its operations and make changes in personnel assignments and responsibilities in order to create one or more R & I Units along guidelines established by the Laboratory as described in the preceding section of this report.

3. The school was willing to accept the role of the Laboratory in its observer and evaluative capacities in return for the Laboratory providing consultation assistance in all phases of the operation from needs assessment and problem formulation through information retrieval and research design and evaluation.

4. The school can provide physical facilities for the R & I Unit such as office and conference space, library facilities, flexible and contiguous instructional spaces, etc.

TABLE B.

Staffing Component for Full-Time Personnel Tamalpais Union High School District, 1967-68[a]

Instructional Personnel		Number
Classroom teachers, instructional supervisors, and curriculum associates[b]		263
Librarians		6
Pupil personnel (counselor, psychologists, nurses)		29
Federal Project Coordinators		2
Other Coordinators		2
Deans		13
Principals and Vice Principals		6
	Sub Total	321
District Administrative Personnel		
Superintendent and Assistant Superintendents		2
Directors		4
Administrative Assistants		2
	Sub Total	8
Clerks and Secretaries		55
Plant Operators and Maintenance Personnel		71
	Sub Total	126
	Total	455

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[a] From Tamalpais Union High School District, Financial Report, 1967-68.

[b] Supervisors of Instruction and Curriculum Associates may be assigned teaching duties up to 50%. For this reason they are included with classroom teachers.

TABLE C.

Number of Certificated Personnel by Years of Experience and Amount of Training
Tamalpais Union High School District, 1967-68

Years of Experience	Professional Training				Total
	B.A. or its Equivalent	M.A. or B.A. + 30 Units	M.A. + 12 Units or B.A. + 45 Units	M.A. + 24 Units or B.A. + 60 Units	
0 - 5	5	38	10	25	78
6 - 10	2	8	8	84	102
Above 10	0	4	3	108	115
Total	7	50	21	217	295

TABLE D.

Major Topics of Interest in Educational Innovations in Projects Submitted for Funding Under Special State or Federal Subventions

Curriculum	
Science:	Elementary Science Programs (ESS, SCIS, AAS, ESCP, Introductory Physical Science[a]), and Biology
Mathematics:	SMSG
English:	Discourse centered curriculum
Social Studies:	Anthropology, Economics, Geography, History, American Government, and Amherst Social Studies Program
Methods of Instruction	Linguistics approach (English and Foreign Language) Audio-Lingual approach (Foreign Language) Use of film as Language System (English) Inductive Method (Mathematics) Socratic Method (Mathematics) Individualizing Instruction
New Instructional Organizations	Teaching Laboratories for Educationally Disadvantaged Students Research and Instructional Units
Special Pupils	
Educationally Deprived Students:	Interdisciplinary program (English and Mathematics) Inductive Laboratory approach to teaching of Mathematics Work Study Projects: Use of Instructional and Non-Instructional Aides Vocational Guidance and Training Program Prescriptive Teaching of Reading Remedial Reading and Cultural Arrangement (English)
Other Students:	Environmental Biology for the Educable Mentally Retarded Pupil Curriculum Methods suitable for the Educable Mentally Retarded, Visually handicapped and Aurally handicapped pupil
Special Topics	Program Planning and Budgeting Systems Human Relations including Sensitivity Training

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[a] Interest in this area was for the purpose of coordination and articulation between high school and feeder elementary school districts.

TABLE E.

Ethnic or Racial Distribution of Redwood High School Students and Selected Socio-Economic Characteristics for Families Residing in the Redwood High School Attendance Area

Racial or Ethnic distribution by percent of Redwood students excluding adults, Fall, 1967.[a]		Mean socio-economic level of students as perceived by Unit personnel, Spring, 1968.	Major occupation of adults by percent in families residing in Redwood attendance area, 1964.[b]		Median years of school years completed and median family income for urban communities with 2,000 or more persons in the Redwood High School attendance, 1960.[c]		
					Community	Years of School	Median Family Income
Spanish surname	2.26%	Upper middle income	Professional or semi-professional	50%	Ross	13.6	$10,000+
Other whites	95.42%		Management or Proprietor	20%	Corte Madera	12.7	9,137
Negroes	1.05%		Clerical and sales	15%	Larkspur	12.7	8,273
Chinese, Japanese or Korean	.88%		Other occupation	15%			
American Indian	.17%						
Other non-white	.22%						

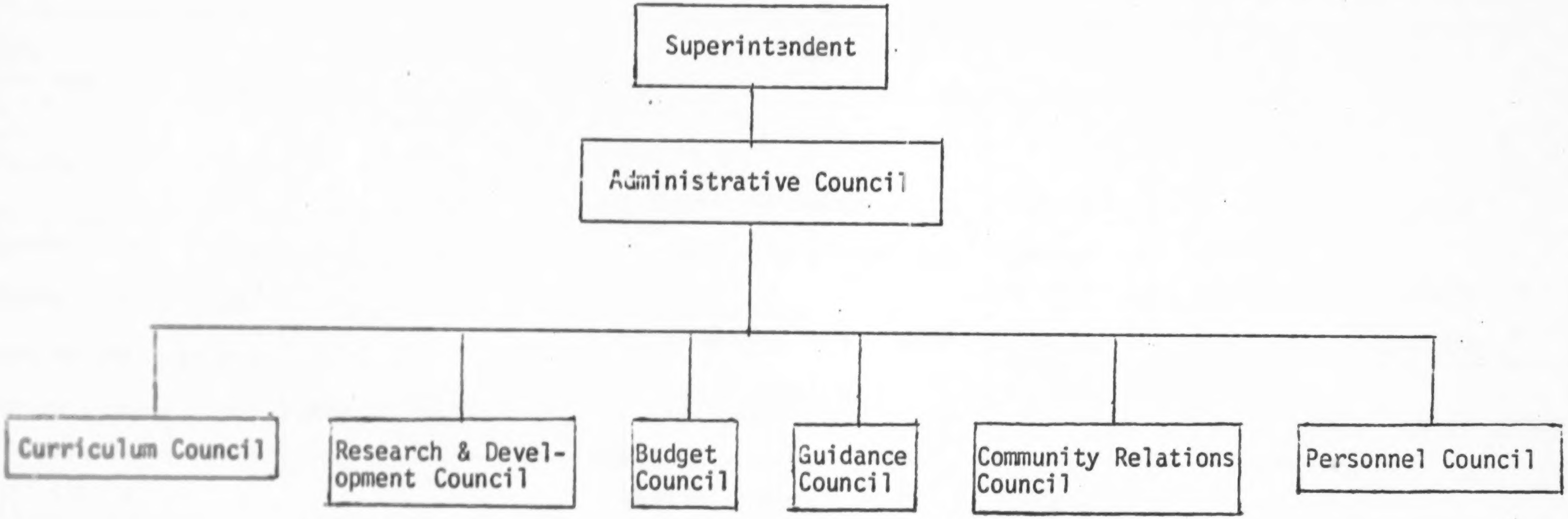
[a] Data extracted from "Racial and Ethnic Distribution of Public School Enrollment" report, Form CEIRI-I prepared by Redwood High School for the Bureau of Intergroup Relations, California State Department of Education, Fall, 1967.

[b] Redwood High School, The School Report for Redwood High School, Tamalpais Union High School District, for the Accrediting Commission for Secondary Schools of the Western Association of Schools and Colleges, Form B, 1965. (Mimeographed.)

[c] U. S. Bureau of the Census, "General Social and Economic Characteristics," United States Census of Population, 1960: California, Table 81.

FIGURE 1

Organizational Chart for
Administrative Policy Development[a]


Superintendent
Administrative Council
Curriculum Council
Research & Development Council
Budget Council
Guidance Council
Community Relations Council
Personnel Council

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[a] Tamalpais Union High School District, "Administrative Policy Development, 1-C-1," Board and Administrative Policies, (Larkspur, California: the District, August, 1967).

TABLE F.

Number of Certificated Personnel, by Years of Experience and Amount of Training, for the Social Studies Department and R & I Unit Team, Redwood High School, 1967-68

Years of Experience	Professional Training												Total		
	B.A. or its Equivalent			M.A. or B.A. + 30 Units			M.A. + 12 Units or B.A. + 45 Units			M.A. + 24 Units or B.A. + 60 Units					
	Other Social Studies Teachers	R & I Unit	Total Dept.	Other Social Studies Teachers	R & I Unit	Total Dept.	Other Social Studies Teachers	R & I Unit	Total Dept.	Other Social Studies Teachers	R & I Unit	Total Dept.	Other Social Studies Teachers	R & I Unit	Total Dept.
0 - 5	0	0	0	0	0	0	1	0	1	2	1	3	3	1	4
6 - 10	0	0	0	0	1	1	0	0	0	0	2	2	0	3	3
Above 10	0	0	0	0	1	1	3	0	3	5	0	5	8	1	9
Total	0	0	0	0	2	2	4	0	4	7	3	10	11	5	16

TABLE G.

Responsibilities of Personnel Involved in the R & I Unit Activity
for Reporting Period Dec. 1967 - July 1969

Item	Lab Program Dir.	Lab Program Assoc.	Lab Program Asst.	Lab Support Staff	Asst. Supt.	Dir. of Instr.	Dept. Supv.	Spec. Projects Asst.	Principal	School Psychol.	Unit Leader	Unit Teacher(s)	Teacher Aide	R & D Council	Others
Assist the school staff in organizing and implementing the Unit in a school, selecting personnel, and in-service training of personnel to service in Unit.	S	P			P	S		S				S			
Assist the district staff in obtaining funds, if necessary, for initiation and support of the Unit.		P			P	S		P							
Assist R & I Unit in the areas of needs assessment, information search and retrieval activities, and interpretation of information desired by the R & I Unit staff.		P			C	C	S	C		C					
Assist R & I Unit in data analysis and research methodology.		P						C							
Observe, describe, and evaluate the actions and processes of the R & I Unit.		S	S		S	P		S							
Prepare reports and evaluative studies of Unit's progress.		S	S	S	S	C		P	S		P	S			
Search and retrieval of training material for in-service training of team.		S	S	P	C	S	S	C							
Give final approval of the composition of the Research and Instructional Unit.					P	S		S							
Provide continuing guidance to the R & I Unit in the selection of its research and development problem and in the total range of project activities.		P	S		C	S		S		C					
Attend meetings of the R & I Unit in order to evaluate its activities, provide central office guidance and assistance and assure adequate intra-district coordination and dissemination.					C	C		C							

LEGEND: P = Primary responsibility S = Shared responsibility C = Consulted

TABLE G CONT'D

Item	Lab Program Dir.	Lab Program Assoc.	Lab Program Asst.	Lab Support Staff	Asst. Supt.	Dir. of Instr.	Dept. Supv.	Spec. Projects Asst.	Principal	School Psychol.	Unit Leader	Unit Teacher(s)	Teacher Aide	R & D Council	Others
Supervise staff and submit all required financial and evaluation reports.					P	C		S							
Provide resource assistance to Unit staff in the form of curriculum consultants and location of appropriate financial support and physical facilities.		S			C	S		S							
Provide initial staff and replacements.									P		S				
Provide physical facilities, materials and equipment for Unit operation.									P		S				
Schedule for flexibility and planning within normal work day.					P				P		P				
Assist Unit in locating and obtaining instructional material.		S	P			C	S			S	S	S			
When needed, arrange in-service workshops and seminars for Unit personnel.		P				C	S	S	S						
Articulate Unit's operation with entire school or district programs.					P		P	S	P		S			S	
Assist with the critique and evaluation of operational results.		S	P		S	C	S	S	S		S			C	
Act as primary liason between District Central Staff and Laboratory.					S			P							
Act as primary liason between Unit staff and other district, school, and Laboratory personnel.											P	S			
Plan and perform day-to-day instruction.											S	S			
Assume Curriculum Associate role for Social Studies Department.											P				

TABLE G CONT'D.

Item	Lab Program Dir.	Lab Program Assoc.	Lab Program Asst.	Lab Support Staff	Asst. Supt.	Dir. of Instr.	Dept. Supv.	Spec. Projects Asst.	Principal	School Psychol.	Unit Leader	Unit Teacher(s)	Teacher Aide	R & D Council	Others
Assume leadership in developing, executing and evaluating instructional program of the Unit.											P	S			
Assume leadership in initiating, establishing and maintaining good home-school relations.											S	S			S
Provide leadership in planning, coordinating and administering, analyzing and reporting Research and Development functions of the Unit.					S		S	S			S	S			
Perform clerical and secretarial duties connected with Research and Instructional activities of the Unit.													P		
Assists with the interpretation of Unit(s) activity to other teachers, students, parents, and community groups.									S						
Assist Unit(s) to identify major instructional problems.									C						
Perform activities related to instructional improvement:															
a. Diagnosis and assessment of present conditions											P	S			
b. Determination and selection of critical instructional needs.											P	S			
c. Searching for viable solutions to meet the needs.											P	S			
d. Develop, when necessary, innovative instructional programs to meet the needs.											P	S			

TABLE G CONT'D.

Item	Lab Program Dir.	Lab Program Assoc.	Lab Program Asst.	Lab Support Staff	Asst. Supt.	Dir. of Instr.	Dept. Supv.	Spec. Projects Asst.	Principal	School Psychol.	Unit Leader	Unit Teacher(s)	Teacher Aide	R & D Council	Others
e. Evaluate solutions											P	S			
f. Demonstrate solutions to other teachers.											P	S			
g. Disseminate results to other teachers.											P	S			
h. Prepare courses of study and curriculum guides for other teachers.												S			

TABLE H.

Frequency of Return of the Educational Information Interest Survey 1968 and 1969

Response Group: 1968	Number Mailed	Replies Received	Percentage of Return
R & I Unit Personnel	5	5	100
Central Office Staff	4	2	50
Principal and Instructional Supervisor	2	2	100
R & D Council	7	3	50
Redwood Curriculum Associates, Head Librarian, Head Counselor	11	5	45.5
American Government Teachers in Other District Schools	10	6	60
TOTALS	39	23	59%

Response Group: 1969	Number Mailed	Replies Received	Percentage of Return
R & I Unit Personnel	5	5	100
American Government Teachers in Other District Schools	7	7	100
Social Studies Teachers at Redwood High School	7	5	71.5
TOTALS	19	17	90%

TABLE I.

Mean Interest Ratings of R & I Unit,
Group A and Group B for 1968 and 1969

Item	R & I Unit 1968	R & I Unit 1969	Group A* 1969	Group B** 1969
New Developments in the Teaching of:				
Science	1.7	1.8	2.7	2.6
Reading	3.5	2.6	3.7	2.9
Modern Math	1.5	1.6	2.1	1.7
Health and Physical Education	2.0	1.6	2.7	2.2
Art and Humanities	3.5	3.6	3.4	3.6
Writing and Composition	3.0	2.6	3.1	2.9
Modern Foreign Language Instruction	2.2	1.6	2.3	2.1
Social Science	3.7	4.0	4.0	4.0
English Language Instruction	2.2	2.2	2.9	2.4
Vocational Education	2.2	1.6	2.9	2.1
New Methods, Organization, or Technology				
Programmed Instruction	2.7	2.0	2.9	2.9
Interdisciplinary Approach	-	3.6	3.6	3.9

continued

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* Group A: Social Studies teachers at Redwood High School.
** Group B: American Government teachers at other District Schools

Note.-Ratings were made on a four-point continuum, ranging from 1 = No interest to 4 = High interest

TABLE I. CONT'D

Item	R & I Unit		Group A*	Group B**
	1968	1969	1969	1969
Computers in the School	2.2	1.8	2.4	2.0
Simulation Techniques	-	3.6	3.9	3.3
Learning Laboratories	3.0	2.1	3.1	2.7
Inquiry-Discovery Method	-	3.6	4.0	3.3
Information Reduction, Storage and Retrieval	2.5	1.9	2.3	2.6
Pass-Fail Grading	-	3.6	3.6	3.4
Individually Prescribed Instruction	3.7	3.4	3.7	3.4
Emphasis on Student Values and Attitudes Rather Than Content	-	4.0	4.0	4.0
Team Teaching	3.7	4.0	2.9	3.7
Independent Study Techniques	-	3.4	4.0	3.9
Non-Graded Schools	3.2	3.4	3.0	3.6
Sensitivity Training	-	3.4	3.1	2.9
Audio-Visual and Multi-Media Developments	3.2	3.4	3.6	2.7
Modular Scheduling	3.2	3.0	3.1	3.7
Special Topics:				
Defining and Assessing Educational Objectives	4.0	3.6	3.7	3.3
Interpersonal Relations between Administrators, Faculty, and Students	-	3.4	3.4	3.7

TABLE I. CONT'D

Item	R & I Unit 1968	1969	Group A* 1969	Group B** 1969
Education and the Structure of Knowledge	3.5	3.2	3.6	3.1
Integration of Innovations	-	3.0	4.0	3.0
Cognitive Development	3.5	3.2	3.6	2.9
Movement from Innovation to Practice	-	3.4	3.7	3.0
Learning Styles	3.7	3.0	3.6	2.9
Motivation of Alienated Youth	-	3.4	3.6	3.6
The Changing Role of the Teacher	3.7	3.6	3.7	3.3
Problem-solving Process	-	3.6	3.9	3.6
Micro-teaching and In-service Training for Teachers	3.2	3.4	3.3	2.6
Research Structures for School Districts	-	2.4	2.9	2.1
Federal Assistance to Education	2.2	3.4	3.1	2.9
Evaluation of Programs	-	3.2	3.4	2.4
Teaching the Culturally Disadvantaged or Different	2.7	3.2	2.9	3.3
De facto Segregation and School Integration	2.7	3.4	3.1	3.4
School-Community Relations	2.5	3.4	3.4	3.3
Educational Parks	3.0	3.0	2.3	2.7

TABLE J.

Mean Ratings of Innovations as Promising or Open to Question for R & I Unit, Group A and Group B, 1969

Innovation	R & I Unit 1969	Group A 1969	Group B 1969
Modular Scheduling	2.6	3.3	3.7
Inquiry-Discovery	3.6	4.0	3.6
Team-Teaching	3.6	2.6	3.9
Individualizing Instruction	3.2	3.7	3.3
Non-Graded Schools	3.4	2.7	2.9
Independent Study	3.2	3.9	3.4
Inservice Instruction Concerning the Learning Process	3.2	3.4	3.0
Interdisciplinary Approach to Content	3.6	3.7	3.7
Teaching Methods Focusing on Learner	3.6	3.7	3.5
Multi-Media Application	3.4	3.3	2.6
Sensitivity Training	2.0	2.1	2.1
Simulation	3.4	3.9	3.1
Micro-Teaching	3.4	2.7	2.3
Encounter Groups	2.4	2.0	2.0
Teacher Militancy	3.4	2.1	2.0

Note.-Ratings were made on a 4-point scale as follows: "4. Promising, 3. Somewhat promising, 2. Value of innovation open to question, 1. Value of innovation very questionable.

TABLE J. CONT'D

Innovation	R & I Unit 1969	Group A 1969	Group B 1969
Raising IQ, Experimentation in New York	1.3	1.3	3.0
Innovative Approaches to Curriculum	3.2	3.4	3.3
Using Behavioral Concepts to Humanize Instruction	3.2	4.0	3.9
New Approaches toward Maintaining Discipline	2.5	2.6	3.3
Educational Television	3.0	2.9	3.0
Information Reduction, Storage and Retrieval	2.4	2.7	2.4
Student Involvement in Curriculum Development and in Administration	3.2	3.7	3.0
Task Analysis	2.8	2.4	2.4
Contemporariness of Subject Matter	3.2	2.7	3.6
Programmed Instruction	3.0	2.7	2.4
Computer Teaching	2.6	2.0	2.3
Teacher "Kits" for Subjects	2.2	2.4	1.7
Bussing	3.4	2.9	2.6
Emphasis on "3-R" Curriculum	1.8	1.1	1.7
Specialized Teacher of the Culturally Disadvantaged	3.6	3.7	3.3
Educational Parks	2.7	2.3	3.0
Unification	3.0	2.3	3.0
Optimum size of school	2.7	2.6	3.3

TABLE K.

Estimates and Ratios of R & D Percentages

	R & I Unit 1968	 1969	Group A 1969	Group B 1969
1. Estimated Current Educational R & D Expenditure				
Median Percentage	.5	1	7.75	3.75
Number of Responses	5	5	6	7
Range of Response	.05-10	.5-10.5	.5-31.5	1.5-12.0
2. Should Spend on Educational R & D Percentage				
Median Percentage	4.0	3.75	20.25	14.25
Ratio of Medians*	8.0	3.75	2.61	3.80
Number of Responses	4	5	6	7
Range of Response	2-20	1.5-21.0	6-42	6-34.5

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* Ratio of Item 2 to 1

TABLE L.

XYZ Curriculum Proposal Response Percentages

Item	R & I Unit 1968	R & I Unit 1969	Group A 1969	Group B 1969
Personal Response	N=5	N=5	N=7	N=7
Definitely refuse to participate	0%	0%	0%	0%
Inclined not to participate but might agree if most other teachers and schools participated	0%	0%	0%	0%
Inclined to participate, but would need much more information before deciding	40%	60%	57%	86%
Quite interested in considering this proposal but would like more information	60%	40%	43%	14%
Most Teachers in District				
Would refuse	0%	0%	0%	0%
Inclined not to participate	0%	0%	14.5%	14.5%
Inclined to participate	100%	80%	71%	71%
Quite interested in participating	0%	20%	14.5%	14.5%
School Administration				
Encourage participation	100%	80%	100%	71%

TABLE L. CONT'D

Item	R & I Unit 1968	R & I Unit 1969	Group A 1969	Group B 1969
Am not sure	0%	20%	0%	29%
Discourage participation	0%	0%	0%	0%
School Board				
Would approve	80%	60%	71%	71%
Am not sure	20%	20%	29%	29%
Would disapprove	0%	20%	0%	0%

TABLE M.

Mean Ratings of Attractive and Unattractive Aspects of the XYZ Curriculum Proposal

Item	R & I Unit 1969	Group A 1969	Group B 1969
Attractive Aspects of Proposal:			
Opportunity to Try Innovations	3.6	3.9	4.0
Evaluation Techniques to Be Learned and Tried	3.2	3.7	3.7
Workshops	3.4	3.4	3.4
Inservice Training	3.4	3.6	3.2
Inservice, Voluntary Participation	3.4	3.1	3.6
Comprehensive Nature of Program	2.4	2.9	3.0
Chance to Motivate Teachers	2.8	3.6	3.6
There Are No Attractive Aspects of the Proposal	1.0	1.3	1.0
Unattractive Aspects of the Proposal:			
Extra Work and More Questionnaires	3.6	2.3	2.7
Relating the Program to Teachers Not Participating	3.2	1.9	2.9

continued

Note.-Four-point scale: Agree (4.0) to Disagree (1.0)

TABLE M.CONT'D

Item	R & I Unit 1969	Group A 1969	Group B 1969
Classroom Observation	2.2	1.6	1.7
Workshops	1.8	2.1	1.7
There Are No Unattractive Aspects of the Proposal	1.4	2.3	3.3

TABLE N.

Mean Ratings of Research and Development Practices

Item	R & I Unit 1969	Group A 1969	Group B 1969
Action research which attemps to solve local problems is more important than fundamental research which is aimed at developing or verifying theories	3.8	3.0	3.3
Using secondary school students' classtime for research is justifiable	3.4	4.3	4.3
Statistical techniques used in educational research tend to be more sophisticated than the data requires	4.0	2.6	3.9
Experimental research designs are not appropriate to classroom research	3.2	1.9	2.7
Teachers do not use research and development information because it is not reported in an understandable form	4.0	3.1	3.7
Research is the primary source of improvement in teaching methods and curriculum development	3.2	2.9	2.9
Extensive training in research techniques is important if one is to produce significant research	3.4	3.4	3.0

Note.-Five-point scale: Strongly Agree (5.0) to Strongly Disagree (1.0)
continued

TABLE N.CONT'D

Item	R & I Unit 1969	Group A 1969	Group B 1969
Administrators should actively participate in research projects	3.4	4.0	4.4
Command of research techniques is more appropriate to teachers than to administrators	2.8	2.9	3.0
Teachers should be given credit, by reducing class loads, for conducting research	3.8	4.0	4.3

TABLE O.

Mean Rating of Sources of Educational R & D Information

Item	R & I Unit 1968	R & I Unit 1969	Group A 1969	Group B 1969
Professional Books	2.2	2.2	3.3	2.7
Research Reports and Bulletins	2.4	2.4	2.7	3.1
Professional Journals	3.0	3.0	3.4	3.0
Audio-visual Materials	1.8	2.0	3.3	2.7
Educational Television	2.8	2.6	2.9	2.9
Special Courses	2.0	2.0	2.9	2.4
Conventions and Conferences	2.9	2.0	2.4	1.9
Workshops	1.2	1.8	2.0	1.6
Visits	1.0	1.6	1.7	1.3
Informal Personal Contacts	3.8	3.0	3.7	3.7
Public Media	3.0	2.6	3.7	3.3

Note.-Four-point scale: Practically Never (1.0-1.5), Once a Year, At Least Once a Month, At least Once a Week (3.5-4.0)

TABLE P.

Mean Ranks of Seven Characteristics
of an Educational Information Service

Item	R & I Unit 1968	 1969	Group A 1969	Group B 1969
Ease of Access to the Information	1	1	2	1
Currency of the Information	2	2	1	1
Comprehensive Coverage	5	5	3	2
Speed of Receipt of Request	3	3	6	4
Evaluation of Material	4	4	4	3
Throughly Documented Research Data	7	6	7	5
Flexibility in the Amount of Detail	6	4	5	6

TABLE Q.

Degree of Knowledge of Twenty-four Social Studies Projects Presently Under Development

Number of Projects Where a Majority (50% or more) of Respondents Have:	R & I Unit 1969	Group A 1969	Group B 1969
No knowledge (Column 1)	12	14	18
Knowledge (Columns 2 - 5)	7	6	5
Used (Columns 6 - 7)	2	1	0
Approximately Even Split Between Two or More of the Above Categories	3	3	1
Total	24	24	24

LEGEND:

Column 1:	Never Heard of Project
Column 2:	Heard or Seen References to Project
Column 3:	Know Major Goals andObjectives of Project
Column 4:	Have General Knowledge of How Project Operates
Column 5:	Am Familiar with Instructional Materials and Techniques
Column 6:	Have Used the Materials and Techniques
Column 7:	Have Evaluated the Materials for Possible Adoption

TABLE R.

Survey of Pre-Operational Planning and Training Seminar for R & I Unit Personnel

Session #	Personnel Involved	Topics Covered	Materials Used	Conclusions Reached
1	Laboratory Staff (Program Assoc.) and Unit Personnel.	Review of organization and goals of the pilot activity as conceived by Laboratory staff in planning papers, including role of Laboratory.	Paul P. Preising, A Survey of the Educational Needs of Santa Clara County, Santa Clara County Supplementary Education Ctr. (San Jose: the Center, 1967.)	Goals of Laboratory made clearer; suspicions of Laboratory's intentions reduced.
		Round table discussion of teachers' perception of goals and objectives for Fall semester, based upon Summer readings and needs assessment instrument administered.		Teachers decided to reject existing American Government course content and began sequential development of a new course based upon results of needs assessment data and summer readings.
		Discussion of results of analysis of needs assessment questionnaire administered to June, 1968 graduates.		Teachers critiqued validity of results of Needs Assessment data collected on June graduates; teachers felt that items should be rewritten and overall length of instrument shortened; teachers felt that the data was collected at an inappropriate time.
		Continuation of discussion of reaching consensus on major goals and objectives for American Government course.		Teachers reached tentative consensus on two broad goals for the course, but failed to shred out subgoals. Major conclusion was that course should stress the student in his relation to his peers, family and community.

TABLE R. CONT'D

Session #	Personnel Involved	Topics Covered	Materials used	Conclusions Reached
2 & 3	Laboratory staff (Program Assoc.), Unit personnel, Consultants in needs assessment: Donald Kase, Research Director, North Bay PACE Center; Raymond Sweigert, Research Director, Title III, California State Department of Education, Consultant in Problem Formulation: Vincent Campbell, AIR, Observers: Thor Krogh, Research for Better Schools; Nelson Price, Director, North Bay PACE Center; School Psychologist.	Strategies and rationale for needs assessment discussed from 2 points of view (theoretical-practical; deductive-inductive).	Donald Kase, Curricular Needs of North Bay Schools: A Study of Opinions Concerning Curricular Needs in the North Bay Counties of Marin, Napa, Sonoma and Solano (Survey Instrument), North Bay PACE Center. Napa: the Center, 1967.	Teachers decided to modify needs assessment instrument and administer it to incoming students in Fall semester. Items in revised instrument taken from Santa Clara County, North Bay, and Orange County PACE Centers.
		Theoretical model for needs assessment and problem formulation was presented and critiqued.	Richard S. Leno, Report on the Survey of Educational Needs, Orange County Supplementary Educational Center. (Santa Anna: the Center, 1966.)	Teachers decided to follow Model suggested for Needs Assessment: a. establish a philosophical framework for course b. translate framework into broad goals and subobjectives based upon framework. c. verify goals and objectives from observational data from external source such as authorities in the field, and users of the educational products (students, parents, employees, etc.) d. establish priorities among Needs for Problem Formulation.
		North Bay PACE Center Needs Assessment Report document was analyzed and critiqued.	Vincent N. Campbell and David G. Markle, Identifying and Formulating Educational Problems, American Institutes for Research, 1967.	
		Initial discussion of theoretical steps in problem formulation held.		
		Unit Team with Laboratory consultant examined and compared analysis and results of Orange County Needs Assessment with those conducted by the Unit staff with June 1968 garduates.	Vimcet Associates, I. Educational Objectives, II. Selecting Appropriate Educational Objectives, III. Vimcet Slide and Tape, Los Angeles.	
		Illustration of problem formulation techniques presented and critiqued.	Thorwald Esbenses, Performance Objectives, I. Writing Instructional Objectives, II. Educational Objectives and the Curriculum, III. Sample Objectives. Duluth Public Schools, August 1967.	
		Steps in identification and development of performance objectives presented.	Donald Kase, no title, mimeographed document on definition, characteristics and examples of terminal performance objectives	
			Vincent N. Campbell, "Steps in Problem Formulation", (Mimeographed.)	

TABLE R. CONT'D

Session #	Personnel Involved	Topics Covered	Materials Used	Conclusions Reached
4	Laboratory Staff (Program Assoc.) and Unit Personnel	Discussion of target population for Needs Assessment activities. Establishment of a tentative calendar of events for research and instructional activities for Fall semester, including deadline dates. Development of items for revised 50 item needs assessment instrument and essay question to be administered to student first week of course. Teachers shredded out goals and attempted sub-objectives for first instructional unit.		Target groups for Needs Assessment selected, (students, parents, other Redwood faculty, and community)
5	Laboratory staff (Program Assoc.) Unit personnel, Consultant in Information Search and Retrieval Strategies: Lois Heller Contra Costa County PACE Center Research Librarian.	Critique of first four sessions of planning Seminar made by Hose. Introduction of Unit to (a) common library reference sources (card catalogue, Educational Index) and (b) special collections (ERIC, SRIS). Unit guided through examples of search techniques with the ERIC collection.	Periodicals Available in the Professional Library Collection of the Contra Costa County Department of Education, Revised List of Periodical Holdings as of September 1967, Contral Costa County Educational Planning Center, Pleasant Hill. ERIC Materials (samples of Microfiche, Research in Education.)	None

TABLE R. CONT'D

Session #	Personnel Involved	Topics Covered	Materials Used	Conclusion Reached
5	Observer: Special Projects Asst.		Examples of commonly used Library reference sources. Mimeographed guide to search procedures.	
6	Laboratory staff (Program Assoc.), Unit personnel, and Instructional Supervisor.	Consultant reviewed strategies for conductance of needs assessment activities (i.e. sources of information, respondents, analysis of data). Unit finalized calendar for Fall semester. Unit reported progress of R & I Unit to district-wide meeting of Social Studies teachers.	None	
7 - 10	Unit personnel.	Unit developed content materials for first week of instruction.		Unit reaches concensus on goals and sub-goals for ongoing course in American Government but failed to shred out student performance objectives.

TABLE 5.

R & I Unit Ratings of Training Methods Considered Most Effective for each of Seven Training Areas

Training Methods	Orientation to Research Methodology	Needs Assess- ment	Problem Formula- tion	Information Search and Interpretation	Field Testing of Innovations	Evaluation	Long-range Planning	Total for All Training Areas
Discussions with consultants	3[a]	4	3	2	1	2	2	17
Performing Tasks with Consultants' Assistance	3	4	3	3	1	3	1	17
Participation in Workshops	3	4	3	4	1	0	1	16
Brainstorming	0	2	1	0	4	3	5	15
Informal Lectures	2	1	3	1	1	0	1	8
Simulation Exercises	1	0	0	0	0	1	2	4
Articles or Pamphlets	0	0	0	2	1	1	0	4
"How to do it" Instructions	0	0	1	0	2	1	0	4
Individual Study	1	0	0	1	1	0	0	3
Field Trips	0	0	0	1	0	0	1	2
Attending College Course	0	0	0	0	1	0	1	2
Self-Instructional Guides	0	0	1	0	0	0	0	1
Writing Results	0	0	0	0	0	1	0	1
Self-Instructional Charts	0	0	0	0	0	0	0	0

[a] Number of times rated most effective by Unit members.

TABLE T.

R & I Unit Ratings of Training Methods Considered Least Effective for Each of Seven Training Areas

Training Methods	Orientation To Research Methodology	Needs Assess-ment	Problem Formula-tion	Information Search and Interpretation	Field Testing of Innovations	Evaluation	Long-range Planning	Total for All Training Areas
Articles or pamphlets	1[a]	2	3	1	1	1	0	9
Self-Instructional Charts	2	1	2	0	1	2	1	9
Individual Study	1	1	2	1	0	0	1	6
Field Trips	2	2	1	0	0	0	0	5
Writing Reports	0	0	1	1	1	1	1	5
Informal Lectures	1	0	0	0	1	1	0	3
Brainstorming	1	0	0	2	0	0	0	3
"How to do It" Instructions	1	1	0	0	0	0	1	3
Self-Instructional Guides	0	0	0	1	0	1	0	2
Attending College Course	0	1	0	0	0	0	1	2
Simulation Exercises	0	1	0	0	0	0	0	1
Performing Tasks with Consultants' Assistance	0	0	0	0	1	0	0	1
Discussions with Consultants	0	0	0	0	0	0	0	0
Participation in Workshops	0	0	0	0	0	0	0	0

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[a] Number of times rated most effective by Unit members.

TABLE U.

Calendar of Events for February, 1968 - July, 1969

I. Planning Phase

February	Redwood High School chosen as R & I Unit site.
March	Social Studies selected as department to implement R & I Unit.
	Redwood Principal, Social Studies Curriculum Associate, and Laboratory consultant made field visitation to University of Wisconsin R & D Center and R & I Units in operation.
April	American Government chosen as focus of R & I Unit, Social Studies Curriculum Associate and four American Government teachers selected as Unit members.
May	District staff submitted a $9,752.00 research proposal to USOE under Title IV, ESEA, for field testing and evaluation of an R & I Unit.
	R & I Unit team, under guidance of Assistant Superintendent, requested $2,500.00 from District Research and Development Council to support summer pre-operational planning activities.
	Upon request by R & I Unit team, Laboratory consultant searched for and submitted for team review: (a) statement of goals and objectives developed by other Districts for American Government courses, (b) exemplary standardized achievement tests suitable for American Government, and (c) needs assessment instruments developed by various Title III Supplementary Education Centers (Santa Clara SPACE, Project EDINN of Monterey, Santa Cruz, and San Benito counties, and North Bay PACE).
	R & I Unit selected the 50-item Santa Clara Needs Assessment #2 which stresses educational objectives in the affective domain, and the ETS Cooperative Social Studies Test, Form A: Civics.
June	R & I Unit teachers administered the needs assessment and standardized civics test to outgoing 1967-68 seniors in American Government classes.

	District Research and Development Council approved funding of the summer pre-operational Planning Session, pending approval of the USOE grant.
	Redwood Principal and Social Studies Curriculum Associate rescheduled R & I Unit teachers' programs to provide common planning period during 1968-69 academic year.
August	R & I Unit project tentatively approved by USOE, subject to release of funds.
	Consultants for pre-operational Planning Session met with Laboratory staff, R & I Unit personnel, and District representatives to refine instructional objectives for the Planning Session.
	R & I Unit team analyzed data from needs assessment questionnaire administered to seniors in American Government and selected items of highest need for inclusion in a revised instrument. The revised questionnaire also included items representing high need areas as identified by needs assessment studies conducted by North Bay PACE Center, and Orange County Supplementary Education Center, and some items developed by the Unit team. This was done to achieve a balance between the affective and cognitvie domains. Unit team established their strategy and calendar for instructional and needs assessment activities.
September	Two-week pre-operational Planning Session held to: (a) clarify roles and functions of Unit personnel and Laboratory staff, (b) develop a work calendar for the Unit's activities, (c) examine the Unit's resources for carryingout these activities, and (d) conduct training sessions in research methodology for Unit personnel. Outside specialists presented techniques in the following areas: needs analysis, problem formulation, information search and retrieval, and instructional objective formulation. During the session, the need emerged for the Unit team to define its rationale, goals, and performance objectives. Unit members reached consensus on tentative goals for the American Government course, i.e. to get each student to look at himself and his environment, but failed to refine these into precise behavioral objectives.

II. Operational Phase: Initiation of Instruction and Research Program

R & I Unit teachers administered: (a) revised needs assessment instrument, (b) an essay question regarding needs of youth in today's society, and (c) the ETS standardized civics test to all 1968-69 incoming seniors.

R & I Unit Leader conducted simple content analysis of student essays, isolating five high need areas: security/love, communication, freedom, something to believe in, and competition.

R & I Unit teachers began to address themselves to these high student needs in developing their individual instructional plans for their classes.

R & I Unit presented progress report to District Research and Development Council on Planning Session and projected activities for first semester.

After waiting approximately one month for notification of release of funds from USOE, tentative agreement was drawn up between Laboratory and District to provide for sharing of R & I Unit expenses, should USOE funding not be granted.

R & I Unit team finding that meeting for one hour each day during second period was insufficient to conduct their research activities, began holding additional meetings after school.

October — Instructional Aide assigned to the R & I Unit, working at a rate of four to five hours per week, began analysis of a random sample of 50 of the needs assessment questionnaires, from which an estimate of the total group mean would be derived.

R & I Unit team devised a short needs assessment form by combining high priority needs identified by the student responses to the essay question and several traditional objectives for government courses into a list of eleven high need areas. Unit teachers administered this short form to parents at a PTA Back-to-School Night meeting, mailed the form to a random sample of 100 parents of Redwood students, and administered it to Redwood teachers and administrators at conference period faculty meetings.

Several unsuccessful discussions held at R & I Unit meetings in attempt to reach consensus on specific behavioral objectives for the American Government course.

Laboratory consultant gathered reading materials on the writing of behavioral objectives for review by the Unit team.

November R & I Unit team revised the long needs assessment questionnaire by combined needs identified as critical by the students with items not identified as important by the students, but which represented traditional objectives of a government course to produce a 30 item form. The revised long form was mailed to a random sample of 50 parents of Redwood students.

R & I Unit team administered the short needs assessment form of eleven student needs to be ranked senior American Government classes.

R & I Unit team scheduled two-hour after school meetings per week in addition to their planning period during school hours, in order to confer with Laboratory consultant on a regular basis.

Unit team requested that R & I Unit planning period be changed from second to seventh period for second semester, to facilitate continuation of activities into after school hours, when necessary, and to avoid interruptions from teaching duties.

USOE approved funding of the R & I Unit project for the period November 1, 1968 - July 31, 1969.

District central staff representative reminded Unit teachers of the need to maintain accurate records of their activities and of their obligation to assist with the final report of the project to USOE. Laboratory consultant reviewed for the Unit teachers Stufflebeam's CIPP evaluation scheme to be employed in evaluating the project.

R & I Unit team examined exemplary needs assessment reports from the Santa Clara Supplementary Education Center and North Bay PACE Center, and planned strategy for analyzing and reporting their needs assessment data.

Unit team analyzed results of the 50 item needs assessment questionnaire administered to seniors. This indicated, for each item, the mean difference between what the school is doing and what the school should do, weighted for the degree of importance (Level of Criticality) of that need. This criticality factor allowed the team to rank the needs from the highest to the lowest.

In an attempt to satisfy both majority and idiosyncratic needs of students, R & I Unit teachers planned, on a one-month trial basis, a series of "Parallel Micro-Units" consisting of one-week instructional units on topics identified by the needs assesssment study. Students will be given free choice in the selection of teachers and topics.

December

Unit team reviewed Sociological Resources for the Social Studies (SSRS) materials developed at the University of Michigan. SSRS materials were not incorporated into the Parallel Micro-Units because they had not been released for general distribution.

Laboratory consultant introduced topic of problem formulation. Related reading materials were distributed.

Unit members discussed format for Needs Assessment Study report to be submitted to the District Research and Development Council in January.

At the suggestion of the Laboratory consultant, Unit members used a Q-Sort technique to compare items on the long and short form of the needs assessment questionnaire. Results showed that Unit members could not reach consensus about the definition of several needs statements.

January

R & I Unit team and Laboratory consultant met for three consecutive days to conclude their data analysis and write the needs assessment report.

One teacher represented the Unit at the North Bay PACE Center's Performance Objectives Workshop.

The Unit's initial experiment with Parallel Micro-Units indicated that students' motivation increased when they were allowed to choose the classes they attended. To capitalize on this finding Unit members decided to couple the Parallel Micro-Unit structure with simulation techniques to teach topics such as the office of the Presidency, the Power of Congress and the Supreme Court, and the role of the lobby groups.

Observation, taped student interviews, attendance tallies, and panel discussions were examined as possible methods for evaluating the effectiveness of the Parallel Micro-Units.

R & I Unit members submitted a progress report to District Research and Development Council on Needs Assessment Study and projected activities for second semester.

February Laboratory consultants provided Unit members with an outline of steps (based on the PERT model) to assist them in drawing up a calendar of deadlines.

Unit members and a Laboratory consultant attended a workshop sponsored by the Marin Social Studies Project. They attended sessions dealing with using simulation techniques, writing behavioral objectives, and teaching public issues.

An R & I Unit member represented the team at a preliminary viewing of a new Laboratory product, the Integrated Information Unit (IIU) on Social Studies. He was stimulated enough by his experience to spearhead a program enabling the entire Redwood High School Social Studies department to preview the IIU materials as part of a pilot test conducted by the Laboratory.

To aid Unit members in delimiting and defining a researchable topic, the Laboratory consultant designed a step by step question and answer Problem Formulation Guide.

March Unit members used Problem Formulation Guide as rubric for its progress to District Research and Development Council.

Approximately five weeks were spent by Unit team in conducting experiment outlined in their Problem Formulation report. This necessitated that they: (a) write behavioral objectives, (b) administer pre and post tests to participating students, (c) content analyze tests, and (d) use and evaluate two teaching strategies.

April

After experimenting several weeks with Fenton's inquiry approach, Unit team modified it. Unit Leader agreed to provide Assistant Superintendent with a written statement explaining change in plans.

Unit members decided to conduct an overall assessment of their work. Evaluation techniques such as semantic differential tests, attitude scales, parental questionnaires and Q-Sorts were investigated.

Slide-tape briefing chronicling Unit's activities was shown to parents who attended Redwood High School's Parent's Night.

May

Unit teachers readministered ETS standardized Civics test to assess cognitive gains made by outgoing 1968-69 seniors.

Unit Instructional Aide scored and cross-compared the three sets of scores from ETS civics test. Results showed no increase or decrease in mean scores.

To determine extent to which student needs had been met during the year, Unit team decided to add several items to a closed-end questionnaire designed by Laboratory consultant and administer it to outgoing students. Unit teachers also assisted student newspaper staff in polling student opinions about Social Studies classes.

Unit team prepared and taught a series of Parallel Micro-Units on Italy, Southeast Asia, and Latin America.

Unit Leader and Laboratory consultant discussed long-range plans. Steps to institute the following practices throughout the Social Studies department have been taken: (a) increase use of behavioral objectives, (b) improve evaluation in both cognitive and affective domains on a pre-post basis, and (c) provide time for joint planning by assigning the same consultation and free period to all those who teach a particular course.

June

Results of revised needs assessment questionnaire were analyzed and discussed. Findings from overall evaluation were incorporated by Unit team into final progress report and submitted to District's Assistant Superintendent.

TABLE V.

R & I Unit Product Ratings for Each Product Relative To All Comparison Groups Combined

Criteria	Preliminary Planning	Needs Assessment	Problem Formulation	Parallel Micro-Unit
1. Clarity of rationale and objectives	3.42	4.13	3.58	3.92
2. Usefulness for:				
a. formulating instructional plans	3.75	4.17	3.64	4.11
b. deciding on instructional alternatives	3.89	4.06	3.63	3.92
c. implementing instructional change in the classroom	3.75	4.47	3.45	3.64
3. Interest level of material for yourself	4.20	4.38	4.08	4.28
4. Interest level for other school personnel	3.89	4.28	3.70	4.25
5. Organization and format	2.89	3.56	3.38	3.56
6. Depth of coverage	3.31	4.44	3.47	3.64
7. Adequacy of technical aspects:				
a. methods by which data were collected	3.39	3.69	3.29	3.78
b. methods by which data were analyzed	3.31	3.58	3.22	3.92
c. validity of results	3.17	3.67	2.72	3.78
d. adequacy of planning undertaken	3.58	3.91	3.29	3.83
8. R & I Unit teachers overall grasp of the process which culminated in this project	3.50	3.89	3.47	3.73
Overall Rating	3.55	4.02	3.43	3.87

Note.-Responses were made on a five point scale ranging from 5 (clearly superior) to 1 (clearly inferior).

TABLE W.

R & I Unit Product Ratings for All Products
Combined Relative to Each Comparison Group

Criteria	Other Teachers	District Personnel	County Office Personnel	All Groups
1. Clarity of rationale and objectives	4.09	3.59	3.58	3.75
2. Usefulness for:				
a. Formulating instructional plans	4.21	3.94	3.58	3.91
b. Deciding on instructional alternatives	4.42	3.53	3.67	3.87
c. Implementing instructional change in the classroom	4.17	3.47	3.58	3.74
3. Interest level of material for yourself	4.41	4.00	4.25	4.22
4. Interest level for other school personnel	4.13	3.94	4.00	4.02
5. Organization and format	3.88	2.82	3.33	3.34
6. Depth of coverage	4.29	3.35	3.50	3.71
7. Adequacy of technical aspects:				
a. Methods by which data were collected	4.17	3.31	3.09	3.52
b. Methods by which data were analyzed	4.22	3.19	3.09	3.50
c. Validity of results	4.08	3.13	2.86	3.36
d. Adequacy of planning undertaken	4.22	3.31	3.36	3.63
8. R & I Unit teachers overall grasp of the process which culminated in this project	4.22	3.53	3.20	3.65
Overall Rating	4.19	3.47	3.47	3.71

Note. Responses were made on a five point scale ranging from 5 (clearly superior) to 1 (clearly inferior).

TABLE X.

Satisfaction with Operation of R & I Unit

Item	R & I Unit Team N=5	Other Redwood Personnel* N=4	R & D Council & Central Staff** N=5	Average Rating of All Respondents N=14
1. Level of instruction which students receive in Unit	3.00	5.00	4.80	4.08
2. Academic performance of students	2.60	5.00	3.50	3.40
3. Social interaction of students	4.00	4.67	4.60	4.39
4. Level of student behavior	4.00	4.33	4.00	4.08
5. Services, advice, and role provided by central staff personnel	3.40	0.00	4.33	3.75
6. Services, advice, and role provided by school staff not directly connected with Unit	3.60	3.50	4.50	3.90
7. Services, advice, and role provided by Laboratory staff	4.20	5.00	4.80	4.58
8. Services and advice given by the school administrative staff	3.60	3.50	4.00	3.73
9. Amount and quality of clerical assistance provided for Units operation	3.80	2.00	2.33	3.00
10. Physical facilities for Unit	2.60	2.25	2.40	2.43
11. Financial support for the Unit	4.20	3.00	4.75	4.33
12. Quantity and quality of instructional equipment and supplies	4.00	4.50	4.67	4.30
13. Overall work plan and calendar for Unit	2.50	4.00	4.00	3.40
14. Individual daily work schedule	2.50	4.00	2.75	2.60
15. The organization and work procedures of Unit	1.60	3.50	3.50	2.64
16. Amount and type of orientation to Unit's function and activities prior to initiating operation in Fall 1968	2.00	4.00	3.60	3.00
17. Instruction and aid given in techniques of Needs Assessment	3.80	5.00	4.50	4.20

TABLE X. CONT'D

Item	R & I Unit Team N=5	Other Redwood Personnel* N=4	R & D Council & Central Staff** N=5	Average Rating of All Respondents N=14
18. Instruction and aid given in techniques of problem formulation	3.40	5.00	4.00	3.82
19. Instruction and aid given in techniques of defining performance or behavioral objectives	3.20	5.00	3.75	3.60
20. Instruction and aid given in techniques of information search and retrieval	3.25	4.50	4.33	3.89
21. Instruction and aid given in techniques of data analysis	3.20	5.00	4.33	3.78
22. Instruction and aid given in techniques of evaluation	3.40	4.00	3.50	3.50
23. Instruction and aid given in the techniques of long-range planning	2.80	4.00	3.33	3.00
24. Instruction and aid given in the techniques of decision-making	3.00	3.00	4.33	3.44
25. Time allotment for Unit activities	2.50	3.50	2.80	2.64
26. Amount and type of instructional improvement attempted	3.20	4.00	4.00	3.64
Average level of satisfaction	3.19	3.89	3.92	3.58

Note. - Responses were made on a five point scale ranging from 5 (very satisfied) to 1 (very dissatisfied).

*Other Redwood personnel includes - Principal, Social Studies teachers, Social Studies Supervisor, and Librarian.

**Central Staff includes - Assistant Superintendent, Director of Instruction, Instructional Supervisor, and Special Projects Assistant.

TABLE Y.

Importance of Possible Strengths and Weaknesses of R & I Unit

	R & I Unit Team N=5	Other Social Studies Teachers N=5	Other Redwood Personnel N=3	R & D Council N=4	Central Staff N=4	Average Rating of All Respondents N=21
Strengths						
Continuous process of development and testing of products	2.00	2.20	3.00	2.75	2.75	2.38
Classroom implementation of planning sessions	2.40	2.80	3.00	2.50	2.75	2.67
Availability of consultants and most current resource material	2.00	2.60	2.33	1.75	2.50	2.24
Time for planning	2.00	3.00	3.00	2.75	3.00	2.71
Interaction with non-unit teachers	1.00	1.20	2.00	2.25	2.50	1.71
Small, capable team	2.75	2.40	2.33	2.50	2.75	2.55
Released time; time for summer workshop; time to continue task to completion	2.60	2.80	2.67	2.75	3.00	2.76
An opportunity to compare and discuss educational philosophies, theory and instructional methodology	2.80	2.40	2.67	1.75	2.25	2.38
Opportunity to involve students, parents in developing more student interest, self-knowledge, and communication	2.60	2.80	3.00	2.25	2.25	2.57
In-service training in R & D processes and subsequent use of these processes	1.80	2.40	2.00	1.50	2.75	2.10
Feedback is immediate, therefore reassessment, replanning are possible	1.80	2.40	3.00	1.75	2.75	2.29
Approach to task is organized (rather haphazard); goals have been establised and behavioral objectives defined	2.20	2.60	2.67	2.00	2.75	2.43
Weaknesses						
High cost	1.40	2.00	0.33	1.25	1.75	1.43
Insufficient emphasis on student needs	1.00	2.50	1.00	2.00	0.67	1.50
Depends on continuous guidance from R & D experts	1.75	1.25	0.33	1.00	1.33	1.17
Limited to a few people	1.25	2.25	0.33	1.25	1.00	1.26

Note. - Responses were made on a 3 point scale ranging from 0 (No importance) to 3 (Great importance).

TABLE Y. CONT'D

	R & I Unit Team N=5	Other Social Studies Teachers N=5	Other Redwood Personnel N=3	R & D Council N=4	Central Staff N=4	Average Rating of All Respondents N=21
Uncertainty about aims	2.25	2.60	1.33	2.00	1.50	2.00
Focuses attention on one area only	1.00	2.20	0.33	1.25	0.25	1.10
Lack of time to learn and use R & D techniques	2.00	3.00	0.67	2.25	1.50	2.00
Ought to draw on universities for wider experience	1.40	1.75	0.33	1.25	1.00	1.20
Must meet deadline	2.20	1.80	0.00	1.00	1.00	1.33
Too little emphasis on task analysis	1.33	2.00	0.50	1.25	1.33	1.38
Lack of time (initial workshop was too short; there is not enough time during the day to research and plan properly)	2.20	2.50	1.67	2.25	1.33	2.05
It is difficult to teach and research at the same time; the role change is hard to make	2.80	2.00	1.33	1.50	1.67	1.95
Teachers may not be quite ready for R & I activities (their tools are dealing with assessment not sharp enough)	1.00	2.25	1.33	1.50	0.67	1.37
Lack of coordination among team members or between team and consultants	2.20	2.00	1.00	1.25	1.33	1.67
The Unit may be overreaching; how much it is capable of	2.40	2.00	0.67	1.50	1.33	1.67
Focus is in a single area; teachers may not work effectively with others	1.80	1.25	0.33	1.50	0.67	1.21
Students and parents may not fully understand the purposes of the R & I Unit	1.60	1.67	1.67	1.75	1.00	1.56
Team members are uncertain as to the objective of the R & I Unit	2.00	2.50	1.67	2.00	1.00	1.89
Scientific controls may be weak	1.00	2.33	1.00	1.00	0.33	1.11
Pre-school training did not include sensitivity training	1.60	0.50	1.00	1.50	0.00	1.00
Insufficient guaranteed clerical support	1.00	2.00	2.00	1.25	0.33	1.32
Insufficient consensus of unit team as to the goals of instruction	1.80	2.50	1.67	1.75	1.33	1.84

TABLE Y. CONT'D

	R & I Unit Team N=5	Other Social Studies Teachers N=5	Other Redwood Personnel N=3	R & D Council N=4	Central Staff N=4	Average Rating of All Respondents N=21
Too much emphasis on trying to work together rather than problems concerned with instruction	1.80	2.00	1.00	1.50	1.00	1.50
Too much analysis on solving daily instructional problems. Not enough time on long-range planning and evaluation activities	2.25	1.75	2.33	1.75	1.67	1.94
District and departmental problems demand too much time for unit team	1.40	2.75	1.33	1.75	1.33	1.74
Not enough information concerning unit activities has been disseminated to other school districts	1.00	1.75	0.67	1.00	0.00	0.95
Unit team more interested in creating their own innovation rather than trying out and evaluating well developed instructional units prepared by outside groups	1.40	2.33	0.67	1.50	0.67	1.33
Unit team has not considered district goals for the government course. Primary emphasis has been concerned with problems found at Redwood High School	1.20	1.00	0.67	1.00	0.67	0.95